

Module Handbook Information Systems M.Sc.

SPO 2019

Winter term 2020/21

Date: 01/10/2020

KIT DEPARTMENT OF ECONOMICS AND MANAGEMENT / KIT DEPARTMENT OF INFORMATICS



Table Of Contents

1. General information	14
1.1. Structural elements	14
1.2. Begin and completion of a module	14
1.3. Module versions	14
1.4. General and partial examinations	14
1.5. Types of exams	14
1.6. Repeating exams	15
1.7. Examiners	15
1.8. Additional accomplishments	15
1.9. Further information	15
1.10. Contact persons	15
2. Study plan.....	16
3. Qualification goals.....	17
4. Field of study structure.....	18
4.1. Master Thesis	18
4.2. Information Systems	18
4.3. Informatics	19
4.4. Economics and Management	23
4.5. Law	24
4.6. Seminars	24
5. Modules	25
5.1. Access Control Systems Lab - M-INFO-104164	25
5.2. Access Control Systems: Foundations and Practice - M-INFO-103046	26
5.3. Accessibility - Assistive Technologies for Visually Impaired Persons - M-INFO-100764	27
5.4. Advanced Data Structures - M-INFO-102731	28
5.5. Advanced Topics in Public Finance - M-WIWI-101511	29
5.6. Advanced Topics in Strategy and Management - M-WIWI-103119	30
5.7. Algorithm Engineering - M-INFO-100795	31
5.8. Algorithmic Graph Theory - M-INFO-100762	32
5.9. Algorithmic Methods for Network Analysis - M-INFO-102400	33
5.10. Algorithms for Ad-Hoc and Sensor Networks - M-INFO-102093	34
5.11. Algorithms for Routing - M-INFO-100031	35
5.12. Algorithms for Visualization of Graphs - M-INFO-102094	36
5.13. Algorithms II - M-INFO-101173	37
5.14. Algorithms in Cellular Automata - M-INFO-100797	38
5.15. Analytics and Statistics - M-WIWI-101637	39
5.16. Application Security Lab - M-INFO-103166	40
5.17. Applied Differential Geometry - M-INFO-102226	41
5.18. Applied Strategic Decisions - M-WIWI-101453	42
5.19. Artificial Intelligence - M-WIWI-105366	43
5.20. Asymmetric Encryption Schemes - M-INFO-100723	44
5.21. Automated Planning and Scheduling - M-INFO-104447	45
5.22. Automated Visual Inspection and Image Processing - M-INFO-100826	46
5.23. Big Data Analytics - M-INFO-100768	47
5.24. Big Data Analytics 2 - M-INFO-102773	48
5.25. Biologically Inspired Robots - M-INFO-100814	49
5.26. Biometric Systems for Person Identification - M-INFO-102968	50
5.27. Business & Service Engineering - M-WIWI-101410	51
5.28. Cognitive Systems - M-INFO-100819	52
5.29. Collective Decision Making - M-WIWI-101504	53
5.30. Computational Cartography - M-INFO-100754	54
5.31. Computational Complexity Theory, with a View Towards Cryptography - M-INFO-101575	55
5.32. Computational Geometry - M-INFO-102110	56
5.33. Computer Architecture - M-INFO-100818	57
5.34. Computer Graphics - M-INFO-100856	58
5.35. Computer Vision for Human-Computer Interaction - M-INFO-100810	59
5.36. Context Sensitive Systems - M-INFO-100728	60

5.37. Critical Digital Infrastructures - M-WIWI-104403	61
5.38. Cross-Functional Management Accounting - M-WIWI-101510	62
5.39. Cryptographic Voting Schemes - M-INFO-100742	63
5.40. Curves and Surfaces for Geometric Design - M-INFO-101231	64
5.41. Curves and Surfaces in CAD I - M-INFO-100837	65
5.42. Curves and Surfaces in CAD III - M-INFO-101213	66
5.43. Data and Storage Management - M-INFO-100739	67
5.44. Data Privacy: From Anonymization to Access Control - M-INFO-104045	68
5.45. Data Science for Finance - M-WIWI-105032	69
5.46. Data Science: Advanced CRM - M-WIWI-101470	70
5.47. Data Science: Data-Driven Information Systems - M-WIWI-103117	71
5.48. Data Science: Data-Driven User Modeling - M-WIWI-103118	73
5.49. Data Science: Evidence-based Marketing - M-WIWI-101647	74
5.50. Datamanagement in the Cloud - M-INFO-100769	75
5.51. Decentralized Systems: Fundamentals, Modeling, and Applications - M-INFO-105334	76
5.52. Decision Procedures with Applications to Software Verification - M-INFO-104381	77
5.53. Deep Learning and Neural Networks - M-INFO-104460	78
5.54. Deep Learning for Computer Vision - M-INFO-104099	79
5.55. Deployment of Database Systems - M-INFO-100780	80
5.56. Design and Architectures of Embedded Systems (ES2) - M-INFO-100831	81
5.57. Design Principles for Interactive Real-Time Systems - M-INFO-100753	82
5.58. Designing Interactive Information Systems - M-WIWI-104080	83
5.59. Development of Business Information Systems - M-WIWI-101477	84
5.60. Digital Service Systems in Industry - M-WIWI-102808	85
5.61. Distributed Computing - M-INFO-100761	86
5.62. Econometrics and Statistics I - M-WIWI-101638	87
5.63. Econometrics and Statistics II - M-WIWI-101639	88
5.64. Economic Theory and its Application in Finance - M-WIWI-101502	89
5.65. eEnergy: Markets, Services and Systems - M-WIWI-103720	90
5.66. Electronic Markets - M-WIWI-101409	91
5.67. Embedded Systems for Multimedia and Image Processing - M-INFO-100759	93
5.68. Empirical Software Engineering - M-INFO-100798	94
5.69. Energy Economics and Energy Markets - M-WIWI-101451	95
5.70. Energy Economics and Technology - M-WIWI-101452	96
5.71. Energy Informatics 1 - M-INFO-101885	97
5.72. Energy Informatics 2 - M-INFO-103044	98
5.73. Energy System Modelling - M-INFO-104117	99
5.74. Entrepreneurship (EnTechnon) - M-WIWI-101488	100
5.75. Environmental Economics - M-WIWI-101468	102
5.76. European and National Technology Law - M-INFO-104810	103
5.77. Experimental Economics - M-WIWI-101505	104
5.78. Finance 1 - M-WIWI-101482	105
5.79. Finance 2 - M-WIWI-101483	106
5.80. Finance 3 - M-WIWI-101480	108
5.81. FinTech Innovations - M-WIWI-105036	109
5.82. Formal Systems - M-INFO-100799	110
5.83. Formal Systems II: Application - M-INFO-100744	111
5.84. Formal Systems II: Theory - M-INFO-100841	112
5.85. Fuzzy Sets - M-INFO-100839	113
5.86. Geometric Optimization - M-INFO-100730	114
5.87. Governance, Risk & Compliance - M-INFO-101242	115
5.88. Graph Partitioning and Graph Clustering in Theory and Practice - M-INFO-100758	116
5.89. Growth and Agglomeration - M-WIWI-101496	117
5.90. Hands-on Bioinformatics Practical - M-INFO-101573	118
5.91. Heterogeneous Parallel Computing Systems - M-INFO-100822	119
5.92. Human Brain and Central Nervous System: Anatomy, Information Transfer, Signal Processing, Neurophysiology and Therapy - M-INFO-100725	120
5.93. Human Computer Interaction - M-INFO-100729	121
5.94. Human Factors in Security and Privacy - M-WIWI-104520	122
5.95. Human-Machine-Interaction in Anthropomatics: Basics - M-INFO-100824	124

5.96. Humanoid Robots - Practical Course - M-INFO-102560	125
5.97. Image Data Compression - M-INFO-100755	126
5.98. Industrial Production II - M-WIWI-101471	127
5.99. Industrial Production III - M-WIWI-101412	129
5.100. Information Processing in Sensor Networks - M-INFO-100895	131
5.101. Information Systems in Organizations - M-WIWI-104068	132
5.102. Information Systems: Analytical and Interactive Systems - M-WIWI-104814	133
5.103. Information Systems: Engineering and Transformation - M-WIWI-104812	134
5.104. Information Systems: Internet-based Markets and Services - M-WIWI-104813	135
5.105. Innovation and Growth - M-WIWI-101478	136
5.106. Innovation Economics - M-WIWI-101514	137
5.107. Innovation Management - M-WIWI-101507	138
5.108. Innovative Concepts for Programming Industrial Robots - M-INFO-100791	140
5.109. Integrated Network and Systems Management - M-INFO-100747	141
5.110. Intellectual Property Law - M-INFO-101215	142
5.111. Intelligent Systems and Services - M-WIWI-101456	143
5.112. Interactive Computer Graphics - M-INFO-100732	144
5.113. Internet of Everything - M-INFO-100800	145
5.114. Introduction to Bioinformatics for Computer Scientists - M-INFO-100749	146
5.115. Introduction to Video Analysis - M-INFO-100736	147
5.116. IT-Security Management for Networked Systems - M-INFO-100786	148
5.117. Lab Course Heterogeneous Computing - M-INFO-104072	149
5.118. Lab Course: Natural Language Processing and Software Engineering - M-INFO-103138	150
5.119. Lab: Designing Embedded Application-Specific Processors - M-INFO-101631	151
5.120. Lab: Designing Embedded Systems - M-INFO-103808	152
5.121. Lab: Efficient parallel C++ - M-INFO-103506	153
5.122. Lab: Graph Visualization in Practice - M-INFO-103302	154
5.123. Lab: Internet of Things (IoT) - M-INFO-103706	155
5.124. Lab: Low Power Design and Embedded Systems - M-INFO-104031	156
5.125. Laboratory Course Algorithm Engineering - M-INFO-102072	157
5.126. Laboratory in Cryptanalysis - M-INFO-101559	158
5.127. Laboratory in Cryptography - M-INFO-101558	159
5.128. Laboratory in Security - M-INFO-101560	160
5.129. Localization of Mobile Agents - M-INFO-100840	161
5.130. Low Power Design - M-INFO-100807	162
5.131. Machine Learning - M-WIWI-103356	163
5.132. Machine Learning - Basic Methods - M-INFO-105252	164
5.133. Machine Translation - M-INFO-100848	165
5.134. Management Accounting - M-WIWI-101498	166
5.135. Market Engineering - M-WIWI-101446	167
5.136. Marketing and Sales Management - M-WIWI-105312	168
5.137. Mathematical Programming - M-WIWI-101473	169
5.138. Mechanisms and Applications of Workflow Systems - M-INFO-100720	171
5.139. Medical Robotics - M-INFO-100820	172
5.140. Meshes and Point Clouds - M-INFO-100812	173
5.141. Microeconomic Theory - M-WIWI-101500	174
5.142. Mobile Communication - M-INFO-100785	175
5.143. Mobile Robots – Practical Course - M-INFO-102977	176
5.144. Model-Driven Software Development - M-INFO-100741	177
5.145. Models of Parallel Processing - M-INFO-100828	178
5.146. Module Master Thesis - M-WIWI-104833	179
5.147. Multicore Computers and Computer Clusters - M-INFO-100788	181
5.148. Multicore Programming in Practice: Tools, Models, Languages - M-INFO-100985	182
5.149. Multi-dimensional Signal Processing and Image Exploitation with Graphic Cards and Other Manycore-Processors - M-INFO-103154	183
5.150. Natural Language Dialog Systems - M-INFO-102414	184
5.151. Natural Language Processing and Dialog Modeling - M-INFO-100899	185
5.152. Natural Language Processing and Software Engineering - M-INFO-100735	186
5.153. Network Economics - M-WIWI-101406	187
5.154. Network Security: Architectures and Protocols - M-INFO-100782	188

5.155. Next Generation Internet - M-INFO-100784	189
5.156. Operations Research in Supply Chain Management - M-WIWI-102832	190
5.157. Optimization and Synthesis of Embedded Systems (ES1) - M-INFO-100830	192
5.158. Parallel Algorithms - M-INFO-100796	193
5.159. Parallel Computer Systems and Parallel Programming - M-INFO-100808	194
5.160. Pattern Recognition - M-INFO-100825	195
5.161. Photorealistic Rendering - M-INFO-100731	196
5.162. Practical Course Applied Telematics - M-INFO-101889	197
5.163. Practical Course Automatic Speech Recognition - M-INFO-102411	198
5.164. Practical Course Circuit Design with Intel Galileo - M-INFO-102353	199
5.165. Practical Course Computer Vision for Human-Computer Interaction - M-INFO-102966	200
5.166. Practical Course Data Management and Data Analysis - M-INFO-103050	201
5.167. Practical Course Decentralized Systems and Network Services - M-INFO-103047	202
5.168. Practical Course FPGA Programming - M-INFO-102661	203
5.169. Practical Course Model-Driven Software Development - M-INFO-101579	204
5.170. Practical Course on Network Security Research - M-INFO-105413	205
5.171. Practical Course Protocol Engineering - M-INFO-102092	206
5.172. Practical Course Research Project: Hands-on Anthropomatics - M-INFO-102568	207
5.173. Practical Course Software Defined Networking - M-INFO-101891	208
5.174. Practical Course: Analysis of Complex Data Sets - M-INFO-102807	209
5.175. Practical Course: Analyzing Big Data - M-INFO-101663	210
5.176. Practical Course: Database Systems - M-INFO-101662	211
5.177. Practical Course: Digital Design & Test Automation Flow - M-INFO-102570	212
5.178. Practical Course: Discrete Freeform Surfaces - M-INFO-101667	213
5.179. Practical Course: General-Purpose Computation on Graphics Processing Units - M-INFO-100724	214
5.180. Practical Course: Geometric Modeling - M-INFO-101666	215
5.181. Practical Course: Hot Research Topics in Computer Graphics - M-INFO-104699	216
5.182. Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data - M-INFO-103128	217
5.183. Practical Course: Neural Network Exercises - M-INFO-103143	218
5.184. Practical Course: Programme Verification - M-INFO-101537	219
5.185. Practical Course: Smart Data Analytics - M-INFO-103235	220
5.186. Practical Course: Virtual Neurorobotics in the Human Brain Project - M-INFO-103227	221
5.187. Practical Course: Visual Computing 2 - M-INFO-101567	222
5.188. Practical Course: Web Applications and Service-Oriented Architectures (II) - M-INFO-101635	223
5.189. Practical Introduction to Hardware Security - M-INFO-104357	224
5.190. Practical Project Robotics and Automation I (Software) - M-INFO-102224	225
5.191. Practical Project Robotics and Automation II (Hardware) - M-INFO-102230	226
5.192. Practical SAT Solving - M-INFO-102825	227
5.193. Practical: Course Engineering Approaches to Software Development - M-INFO-104254	228
5.194. Praktikum: Graphics and Game Development - M-INFO-105384	229
5.195. Principles of Automatic Speech Recognition - M-INFO-100847	230
5.196. Private Business Law - M-INFO-101216	231
5.197. Project Lab: Image Analysis and Fusion - M-INFO-102383	232
5.198. Public Business Law - M-INFO-101217	233
5.199. Randomized Algorithms - M-INFO-100794	234
5.200. Rationale Splines - M-INFO-101853	235
5.201. Rationale Splines - M-INFO-101857	236
5.202. Real-Time Systems - M-INFO-100803	237
5.203. Reconfigurable and Adaptive Systems - M-INFO-100721	238
5.204. Reinforcement Learning and Neural Networks in Robotics - M-INFO-104894	239
5.205. Reliable Computing I - M-INFO-100850	240
5.206. Requirements Engineering - M-INFO-100763	241
5.207. Research Project (Project, 1st Semester) - M-INFO-105037	242
5.208. Research Project (Project, 2nd Semester) - M-INFO-105038	243
5.209. Robotics - Practical Course - M-INFO-102522	244
5.210. Robotics I - Introduction to Robotics - M-INFO-100893	245
5.211. Robotics II: Humanoid Robotics - M-INFO-102756	246
5.212. Robotics III - Sensors and Perception in Robotics - M-INFO-104897	247
5.213. Security - M-INFO-100834	248

5.214. Seminar Information Systems - M-WIWI-104815	249
5.215. Seminar Module Economic Sciences - M-WIWI-102736	250
5.216. Seminar Module Informatics - M-INFO-102822	251
5.217. Seminar Module Law - M-INFO-101218	252
5.218. Service Analytics - M-WIWI-101506	253
5.219. Service Design Thinking - M-WIWI-101503	254
5.220. Service Economics and Management - M-WIWI-102754	255
5.221. Service Innovation, Design & Engineering - M-WIWI-102806	256
5.222. Service Management - M-WIWI-101448	257
5.223. Service Operations - M-WIWI-102805	258
5.224. Signals and Codes - M-INFO-100823	259
5.225. Software Architecture and Quality - M-INFO-100844	260
5.226. Software Development for Modern, Parallel Platforms - M-INFO-100802	261
5.227. Software Engineering II - M-INFO-100833	262
5.228. Software Lab Parallel Numerics - M-INFO-102998	263
5.229. Software Product Line Engineering - M-INFO-105471	264
5.230. Software-Evolution - M-INFO-100719	265
5.231. Statistics and Econometrics II - M-WIWI-105414	266
5.232. Stochastic Information Processing - M-INFO-100829	267
5.233. Stochastic Optimization - M-WIWI-103289	268
5.234. Subdivision Algorithms - M-INFO-101864	270
5.235. Subdivision Algorithms - M-INFO-101863	271
5.236. Symmetric Encryption - M-INFO-100853	272
5.237. Telematics - M-INFO-100801	273
5.238. Testing Digital Systems I - M-INFO-100851	274
5.239. Testing Digital Systems II - M-INFO-102962	275
5.240. Transport Infrastructure Policy and Regional Development - M-WIWI-101485	276
5.241. Ubiquitous Computing - M-WIWI-101458	277
5.242. Ubiquitous Computing - M-INFO-100789	278
5.243. Visualization - M-INFO-100738	279
5.244. Wearable Robotic Technologies - M-INFO-103294	280
5.245. Web and Data Science - M-WIWI-105368	281
5.246. Web Applications and Service-Oriented Architectures (II) - M-INFO-100734	283
5.247. Web Data Management - M-WIWI-101455	284
6. Courses.....	285
6.1. A Closer Look at Social Innovation - T-WIWI-109932	285
6.2. Access Control Systems Lab - T-INFO-108611	286
6.3. Access Control Systems: Foundations and Practice - T-INFO-106061	288
6.4. Accessibility - Assistive Technologies for Visually Impaired Persons - T-INFO-101301	289
6.5. Advanced Data Structures - T-INFO-105687	291
6.6. Advanced Empirical Asset Pricing - T-WIWI-110513	292
6.7. Advanced Game Theory - T-WIWI-102861	294
6.8. Advanced Lab in Ubiquitous Computing - T-WIWI-102761	295
6.9. Advanced Lab Informatics (Master) - T-WIWI-110548	296
6.10. Advanced Lab Security, Usability and Society - T-WIWI-108439	303
6.11. Advanced Machine Learning - T-WIWI-109921	306
6.12. Advanced Management Accounting - T-WIWI-102885	308
6.13. Advanced Management Accounting 2 - T-WIWI-110179	310
6.14. Advanced Statistics - T-WIWI-103123	311
6.15. Advanced Stochastic Optimization - T-WIWI-106548	312
6.16. Advanced Topics in Economic Theory - T-WIWI-102609	313
6.17. Algorithm Engineering - T-INFO-101332	314
6.18. Algorithmic Graph Theory - T-INFO-103588	315
6.19. Algorithmic Methods for Network Analysis - T-INFO-104759	316
6.20. Algorithms for Ad-Hoc and Sensor Networks - T-INFO-104388	317
6.21. Algorithms for Routing - T-INFO-100002	318
6.22. Algorithms for Visualization of Graphs - T-INFO-104390	319
6.23. Algorithms II - T-INFO-102020	320
6.24. Algorithms in Cellular Automata - T-INFO-101334	321
6.25. Analysis of Multivariate Data - T-WIWI-103063	322

6.26. Analyzing and Evaluating Innovation Processes - T-WIWI-108774	323
6.27. Analyzing Big Data - Laboratory Course - T-INFO-103202	324
6.28. Application Security Lab - T-INFO-106289	325
6.29. Applied Differential Geometry - T-INFO-104546	326
6.30. Applied Differential Geometry - Practical - T-INFO-111000	327
6.31. Applied Econometrics - T-WIWI-103125	328
6.32. Artificial Intelligence in Service Systems - T-WIWI-108715	329
6.33. Asset Pricing - T-WIWI-102647	331
6.34. Asymmetric Encryption Schemes - T-INFO-101260	332
6.35. Auction Theory - T-WIWI-102613	333
6.36. Automated Planning and Scheduling - T-INFO-109085	334
6.37. Automated Visual Inspection and Image Processing - T-INFO-101363	335
6.38. Basics of German Company Tax Law and Tax Planning - T-WIWI-108711	336
6.39. Big Data Analytics - T-INFO-101305	337
6.40. Big Data Analytics 2 - T-INFO-105742	338
6.41. Biologically Inspired Robots - T-INFO-101351	339
6.42. Biometric Systems for Person Identification - T-INFO-105948	340
6.43. Blockchains & Cryptofinance - T-WIWI-108880	341
6.44. Bond Markets - T-WIWI-110995	342
6.45. Bond Markets - Models & Derivatives - T-WIWI-110997	343
6.46. Bond Markets - Tools & Applications - T-WIWI-110996	344
6.47. Business Administration in Information Engineering and Management - T-WIWI-102886	345
6.48. Business Data Analytics: Application and Tools - T-WIWI-109863	346
6.49. Business Data Strategy - T-WIWI-106187	347
6.50. Business Dynamics - T-WIWI-102762	348
6.51. Business Intelligence Systems - T-WIWI-105777	349
6.52. Business Models in the Internet: Planning and Implementation - T-WIWI-102639	351
6.53. Business Planning - T-WIWI-102865	352
6.54. Business Planning for Founders - EUCOR - T-WIWI-110389	353
6.55. Business Strategies of Banks - T-WIWI-102626	354
6.56. Case Studies in Sales and Pricing - T-WIWI-102834	355
6.57. Case Studies Seminar: Innovation Management - T-WIWI-102852	356
6.58. Challenges in Supply Chain Management - T-WIWI-102872	357
6.59. Cognitive Systems - T-INFO-101356	358
6.60. Competition in Networks - T-WIWI-100005	359
6.61. Computational Cartography - T-INFO-101291	360
6.62. Computational Complexity Theory, with a View Towards Cryptography - T-INFO-103014	361
6.63. Computational Geometry - T-INFO-104429	362
6.64. Computational Risk and Asset Management - T-WIWI-102878	363
6.65. Computer Architecture - T-INFO-101355	364
6.66. Computer Contract Law - T-INFO-102036	365
6.67. Computer Graphics - T-INFO-101393	366
6.68. Computer Graphics Pass - T-INFO-104313	367
6.69. Computer Vision for Human-Computer Interaction - T-INFO-101347	368
6.70. Context Sensitive Systems - T-INFO-107499	369
6.71. Convex Analysis - T-WIWI-102856	370
6.72. Copyright - T-INFO-101308	371
6.73. Corporate Compliance - T-INFO-101288	372
6.74. Corporate Financial Policy - T-WIWI-102622	373
6.75. Corporate Risk Management - T-WIWI-109050	374
6.76. Credit Risk - T-WIWI-102645	375
6.77. Critical Information Infrastructures - T-WIWI-109248	376
6.78. Cryptographic Voting Schemes - T-INFO-101279	378
6.79. Current Directions in Consumer Psychology - T-WIWI-111100	379
6.80. Current Issues in Innovation Management - T-WIWI-102873	380
6.81. Curves and Surfaces for Geometric Design II - T-INFO-102041	381
6.82. Curves and Surfaces in CAD I - T-INFO-101374	382
6.83. Curves and Surfaces in CAD II - T-INFO-102006	383
6.84. Data and Storage Management - T-INFO-101276	384
6.85. Data Mining and Applications - T-WIWI-103066	385

6.86. Data Privacy: From Anonymization to Access Control - T-INFO-108377	387
6.87. Data Protection by Design - T-INFO-108405	388
6.88. Data Protection Law - T-INFO-101303	389
6.89. Database Systems and XML - T-WIWI-102661	390
6.90. Datamanagement in the Cloud - T-INFO-101306	392
6.91. Decentralized Systems: Fundamentals, Modeling, and Applications - T-INFO-110820	393
6.92. Decision Procedures with Applications to Software Verification - T-INFO-108955	395
6.93. Deep Learning and Neural Networks - T-INFO-109124	396
6.94. Deep Learning for Computer Vision - T-INFO-109796	397
6.95. Demand-Driven Supply Chain Planning - T-WIWI-110971	398
6.96. Deployment of Database Systems - T-INFO-101317	399
6.97. Derivatives - T-WIWI-102643	400
6.98. Design and Architectures of Embedded Systems (ES2) - T-INFO-101368	401
6.99. Design Principles for Interactive Real-Time Systems - T-INFO-101290	402
6.100. Design Thinking - T-WIWI-102866	403
6.101. Designing Interactive Systems - T-WIWI-110851	404
6.102. Developing Business Models for the Semantic Web - T-WIWI-102851	406
6.103. Digital Health - T-WIWI-109246	407
6.104. Digital Marketing and Sales in B2B - T-WIWI-106981	409
6.105. Digital Services: Business Models and Transformation - T-WIWI-110280	410
6.106. Digital Transformation and Business Models - T-WIWI-108875	412
6.107. Discrete-Event Simulation in Production and Logistics - T-WIWI-102718	413
6.108. Distributed Computing - T-INFO-101298	414
6.109. Dynamic Macroeconomics - T-WIWI-109194	415
6.110. Efficient Energy Systems and Electric Mobility - T-WIWI-102793	416
6.111. eFinance: Information Systems for Securities Trading - T-WIWI-110797	417
6.112. Embedded Systems for Multimedia and Image Processing - T-INFO-101296	419
6.113. Emerging Trends in Digital Health - T-WIWI-110144	420
6.114. Emerging Trends in Internet Technologies - T-WIWI-110143	421
6.115. Emissions into the Environment - T-WIWI-102634	422
6.116. Empirical Software Engineering - T-INFO-101335	423
6.117. Employment Law I - T-INFO-101329	424
6.118. Employment Law II - T-INFO-101330	425
6.119. Energy and Environment - T-WIWI-102650	426
6.120. Energy Informatics 1 - T-INFO-103582	427
6.121. Energy Informatics 1 - preliminary work - T-INFO-110356	428
6.122. Energy Informatics 2 - T-INFO-106059	429
6.123. Energy Market Engineering - T-WIWI-107501	430
6.124. Energy Networks and Regulation - T-WIWI-107503	431
6.125. Energy System Modelling - T-INFO-108532	433
6.126. Energy Systems Analysis - T-WIWI-102830	434
6.127. Energy Trade and Risk Management - T-WIWI-102691	435
6.128. Engineering FinTech Solutions - T-WIWI-106193	436
6.129. Engineering Interactive Systems - T-WIWI-110877	438
6.130. Entrepreneurial Leadership & Innovation Management - T-WIWI-102833	439
6.131. Entrepreneurship - T-WIWI-102864	440
6.132. Entrepreneurship Research - T-WIWI-102894	441
6.133. Environmental and Resource Policy - T-WIWI-102616	442
6.134. Environmental Economics and Sustainability - T-WIWI-102615	443
6.135. Environmental Law - T-INFO-101348	444
6.136. European and International Law - T-INFO-101312	445
6.137. European and National Technology Law - T-INFO-109824	446
6.138. Experimental Economics - T-WIWI-102614	447
6.139. Extraordinary additional course in the module Cross-Functional Management Accounting - T-WIWI-108651	448
6.140. Financial Analysis - T-WIWI-102900	449
6.141. Financial Econometrics - T-WIWI-103064	450
6.142. Financial Econometrics II - T-WIWI-110939	452
6.143. Financial Intermediation - T-WIWI-102623	453
6.144. Firm creation in IT security - T-WIWI-110374	455
6.145. Fixed Income Securities - T-WIWI-102644	458

6.146. Formal Systems - T-INFO-101336	459
6.147. Formal Systems II: Application - T-INFO-101281	460
6.148. Formal Systems II: Theory - T-INFO-101378	461
6.149. Fuzzy Sets - T-INFO-101376	462
6.150. Geometric Optimzation - T-INFO-101267	463
6.151. Global Optimization I - T-WIWI-102726	464
6.152. Global Optimization I and II - T-WIWI-103638	465
6.153. Global Optimization II - T-WIWI-102727	466
6.154. Graph Partitioning and Graph Clustering in Theory and Practice - T-INFO-101295	467
6.155. Graph Partitioning and Graph Clustering in Theory and Practice - Practical - T-INFO-110999	468
6.156. Graph Theory and Advanced Location Models - T-WIWI-102723	469
6.157. Hands-on Bioinformatics Practical - T-INFO-103009	470
6.158. Heat Economy - T-WIWI-102695	471
6.159. Heterogeneous Parallel Computing Systems - T-INFO-101359	472
6.160. Human Brain and Central Nervous System: Anatomy, Information Transfer, Signal Processing, Neurophysiology and Therapy - T-INFO-101262	473
6.161. Human Factors in Security and Privacy - T-WIWI-109270	474
6.162. Human-Machine-Interaction - T-INFO-101266	476
6.163. Human-Machine-Interaction in Anthropomatics: Basics - T-INFO-101361	477
6.164. Human-Machine-Interaction Pass - T-INFO-106257	478
6.165. Humanoid Robots - Practical Course - T-INFO-105142	479
6.166. Image Data Compression - T-INFO-101292	480
6.167. Incentives in Organizations - T-WIWI-105781	481
6.168. Information Processing in Sensor Networks - T-INFO-101466	483
6.169. Information Service Engineering - T-WIWI-106423	484
6.170. Innovation Management: Concepts, Strategies and Methods - T-WIWI-102893	486
6.171. Innovation Processes Live - T-WIWI-110234	487
6.172. Innovation Theory and Policy - T-WIWI-102840	488
6.173. Innovative Concepts for Programming Industrial Robots - T-INFO-101328	490
6.174. Integrated Network and Systems Management - T-INFO-101284	491
6.175. Intelligent Agents and Decision Theory - T-WIWI-110915	492
6.176. Intelligent CRM Architectures - T-WIWI-103549	495
6.177. Interactive Computer Graphics - T-INFO-101269	497
6.178. International Business Development and Sales - T-WIWI-110985	498
6.179. International Finance - T-WIWI-102646	499
6.180. International Management in Engineering and Production - T-WIWI-102882	501
6.181. International Selling – EUCOR - T-WIWI-110381	502
6.182. Internet Law - T-INFO-101307	503
6.183. Internet of Everything - T-INFO-101337	504
6.184. Introduction to Bayesian Statistics for Analyzing Data - T-WIWI-110918	505
6.185. Introduction to Bioinformatics for Computer Scientists - T-INFO-101286	507
6.186. Introduction to Stochastic Optimization - T-WIWI-106546	508
6.187. Introduction to Video Analysis - T-INFO-101273	509
6.188. IT- Security Law - T-INFO-109910	510
6.189. IT-Security Management for Networked Systems - T-INFO-101323	511
6.190. Joint Entrepreneurship Summer School - T-WIWI-109064	512
6.191. Judgment and Decision Making - T-WIWI-111099	513
6.192. KD ³ Lab Hands-On Research Course: New Ways and Tools in Experimental Economics - T-WIWI-111109	514
6.193. Knowledge Discovery - T-WIWI-102666	515
6.194. Lab Course Heterogeneous Computing - T-INFO-108447	517
6.195. Lab Course: Natural Language Processing and Software Engineering - T-INFO-106239	518
6.196. Lab: Designing Embedded Application-Specific Processors - T-INFO-103115	519
6.197. Lab: Designing Embedded Systems - T-INFO-107689	521
6.198. Lab: Efficient parallel C++ - T-INFO-106992	523
6.199. Lab: Graph Visualization in Practice - T-INFO-106580	524
6.200. Lab: Internet of Things (IoT) - T-INFO-107493	525
6.201. Lab: Low Power Design and Embedded Systems - T-INFO-108323	527
6.202. Laboratory Course Algorithm Engineering - T-INFO-104374	529
6.203. Laboratory in Cryptanalysis - T-INFO-102990	530
6.204. Laboratory in Cryptography - T-INFO-102989	531

6.205. Laboratory in Security - T-INFO-102991	532
6.206. Large-scale Optimization - T-WIWI-106549	533
6.207. Law of Contracts - T-INFO-101316	534
6.208. Liberalised Power Markets - T-WIWI-107043	535
6.209. Life Cycle Assessment - T-WIWI-110512	538
6.210. Localization of Mobile Agents - T-INFO-101377	539
6.211. Low Power Design - T-INFO-101344	540
6.212. Machine Learning - Basic Methods - T-INFO-110630	541
6.213. Machine Learning 1 - Basic Methods - T-WIWI-106340	542
6.214. Machine Learning 2 - Advanced Methods - T-WIWI-106341	544
6.215. Machine Translation - T-INFO-101385	546
6.216. Management Accounting 1 - T-WIWI-102800	547
6.217. Management Accounting 2 - T-WIWI-102801	549
6.218. Management of IT-Projects - T-WIWI-102667	551
6.219. Managing New Technologies - T-WIWI-102612	553
6.220. Market Engineering: Information in Institutions - T-WIWI-102640	554
6.221. Market Research - T-WIWI-107720	555
6.222. Marketing Analytics - T-WIWI-103139	557
6.223. Marketing Strategy Business Game - T-WIWI-102835	559
6.224. Master Thesis - T-WIWI-103142	562
6.225. Mechanisms and Applications of Workflow Systems - T-INFO-101257	563
6.226. Medical Robotics - T-INFO-101357	564
6.227. Meshes and Point Clouds - T-INFO-101349	565
6.228. Methods in Economic Dynamics - T-WIWI-102906	566
6.229. Methods in Innovation Management - T-WIWI-110263	567
6.230. Mixed Integer Programming I - T-WIWI-102719	568
6.231. Mixed Integer Programming II - T-WIWI-102720	569
6.232. Mobile Communication - T-INFO-101322	570
6.233. Mobile Robots - Practical Course - T-INFO-105951	571
6.234. Model Driven Software Development - T-INFO-101278	572
6.235. Modeling and Analyzing Consumer Behavior with R - T-WIWI-102899	573
6.236. Modeling and OR-Software: Advanced Topics - T-WIWI-106200	574
6.237. Models of Parallel Processing - T-INFO-101365	575
6.238. Multicore Computers and Computer Clusters - T-INFO-101325	576
6.239. Multicore Programming in Practice: Tools, Models, Languages - T-INFO-101565	577
6.240. Multi-Dimensional Signal Processing and Image Exploitation with Graphic Cards and Other Manycore-Processors - T-INFO-106278	578
6.241. Multivariate Statistical Methods - T-WIWI-103124	579
6.242. Natural Language Processing and Dialog Modeling - T-INFO-101473	580
6.243. Natural Language Processing and Software Engineering - T-INFO-101272	581
6.244. Network Security: Architectures and Protocols - T-INFO-101319	582
6.245. Next Generation Internet - T-INFO-101321	583
6.246. Non- and Semiparametrics - T-WIWI-103126	584
6.247. Nonlinear Optimization I - T-WIWI-102724	585
6.248. Nonlinear Optimization I and II - T-WIWI-103637	587
6.249. Nonlinear Optimization II - T-WIWI-102725	590
6.250. Operations Research in Health Care Management - T-WIWI-102884	592
6.251. Operations Research in Supply Chain Management - T-WIWI-102715	593
6.252. Optimization and Synthesis of Embedded Systems (ES1) - T-INFO-101367	595
6.253. Optimization Models and Applications - T-WIWI-110162	596
6.254. Optimization under Uncertainty - T-WIWI-106545	597
6.255. Panel Data - T-WIWI-103127	598
6.256. Parallel Algorithms - T-INFO-101333	599
6.257. Parallel Computer Systems and Parallel Programming - T-INFO-101345	600
6.258. Parametric Optimization - T-WIWI-102855	601
6.259. Patent Law - T-INFO-101310	603
6.260. Pattern Recognition - T-INFO-101362	604
6.261. Personalization and Services - T-WIWI-102848	605
6.262. Photorealistic Rendering - T-INFO-101268	606
6.263. Planning and Management of Industrial Plants - T-WIWI-102631	607

6.264. Portfolio and Asset Liability Management - T-WIWI-103128	608
6.265. Practical Course Applied Telematics - T-INFO-103585	609
6.266. Practical Course Automatic Speech Recognition - T-INFO-104775	610
6.267. Practical Course Circuit Design with Intel Galileo - T-INFO-105580	611
6.268. Practical Course Computer Vision for Human-Computer Interaction - T-INFO-105943	612
6.269. Practical Course Data Management and Data Analysis - T-INFO-106066	613
6.270. Practical Course Decentralized Systems and Network Services - T-INFO-106063	614
6.271. Practical Course Digital Design & Test Automation Flow - T-INFO-105565	615
6.272. Practical Course Engineering Approaches to Software Development - T-INFO-108791	616
6.273. Practical Course FPGA Programming - T-INFO-105576	617
6.274. Practical Course Model-Driven Software Development - T-INFO-103029	618
6.275. Practical Course Natural Language Dialog Systems - T-INFO-104780	619
6.276. Practical Course on Network Security Research - T-INFO-110938	620
6.277. Practical Course Protocol Engineering - T-INFO-104386	621
6.278. Practical Course Research Project: Hands-on Anthropomatics - T-INFO-105278	622
6.279. Practical Course Software Defined Networking - T-INFO-103587	623
6.280. Practical Course: Analysis of Complex Data Sets - T-INFO-105796	624
6.281. Practical Course: Database Systems - T-INFO-103201	625
6.282. Practical Course: Discrete Freeform Surfaces - T-INFO-103208	626
6.283. Practical Course: General-Purpose Computation on Graphics Processing Units - T-INFO-109914	627
6.284. Practical Course: Geometric Modeling - T-INFO-103207	628
6.285. Practical Course: Hot Research Topics in Computer Graphics - T-INFO-109577	629
6.286. Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data - T-INFO-106219	630
6.287. Practical Course: Neural Network Exercises - T-INFO-106259	631
6.288. Practical Course: Programme Verification - T-INFO-102953	632
6.289. Practical Course: Smart Data Analytics - T-INFO-106426	633
6.290. Practical Course: Virtual Neurorobotics in the Human Brain Project - T-INFO-106417	634
6.291. Practical Course: Visual Computing 2 - T-INFO-103000	635
6.292. Practical Course: Web Applications and Service-Oriented Architectures (II) - T-INFO-103121	636
6.293. Practical Introduction to Hardware Security - T-INFO-108920	637
6.294. Practical Project Robotics and Automation I (Software) - T-INFO-104545	638
6.295. Practical Project Robotics and Automation II (Hardware) - T-INFO-104552	639
6.296. Practical SAT Solving - T-INFO-105798	640
6.297. Practical Seminar Digital Service Systems - T-WIWI-106563	641
6.298. Practical Seminar: Advanced Analytics - T-WIWI-108765	642
6.299. Practical Seminar: Data-Driven Information Systems - T-WIWI-106207	643
6.300. Practical Seminar: Health Care Management (with Case Studies) - T-WIWI-102716	644
6.301. Practical Seminar: Information Systems and Service Design - T-WIWI-108437	645
6.302. Practical Seminar: Service Innovation - T-WIWI-110887	646
6.303. Praktikum: Graphics and Game Development - T-INFO-110872	647
6.304. Predictive Mechanism and Market Design - T-WIWI-102862	648
6.305. Predictive Modeling - T-WIWI-110868	649
6.306. Price Management - T-WIWI-105946	650
6.307. Price Negotiation and Sales Presentations - T-WIWI-102891	651
6.308. Pricing - T-WIWI-102883	652
6.309. Principles of Automatic Speech Recognition - T-INFO-101384	653
6.310. Product and Innovation Management - T-WIWI-109864	654
6.311. Production and Logistics Management - T-WIWI-102632	656
6.312. Project Lab Cognitive Automobiles and Robots - T-WIWI-109985	657
6.313. Project Lab Machine Learning - T-WIWI-109983	659
6.314. Project Lab: Image Analysis and Fusion - T-INFO-104746	660
6.315. Project Management - T-WIWI-103134	661
6.316. Public Management - T-WIWI-102740	662
6.317. Public Media Law - T-INFO-101311	663
6.318. Public Revenues - T-WIWI-102739	664
6.319. Python for Computational Risk and Asset Management - T-WIWI-110213	665
6.320. Quantitative Methods in Energy Economics - T-WIWI-107446	666
6.321. Randomized Algorithms - T-INFO-101331	667
6.322. Rationale Splines - T-INFO-103544	668

6.323. Rationale Splines - T-INFO-103543	669
6.324. Real-Time Systems - T-INFO-101340	670
6.325. Recommender Systems - T-WIWI-102847	671
6.326. Reconfigurable and Adaptive Systems - T-INFO-101258	675
6.327. Regulation Theory and Practice - T-WIWI-102712	676
6.328. Reinforcement Learning and Neural Networks in Robotics - T-INFO-109928	677
6.329. Reliable Computing I - T-INFO-101387	678
6.330. Requirements Engineering - T-INFO-101300	679
6.331. Research Project (Project, 1st Semester) - Oral Exam - T-INFO-110218	680
6.332. Research Project (Project, 1st Semester) - Presentation - T-INFO-110219	681
6.333. Research Project (Project, 1st Semester) - Project Proposal - T-INFO-110220	682
6.334. Research Project (Project, 2nd Semester) - Oral Exam - T-INFO-110221	683
6.335. Research Project (Project, 2nd Semester) - Presentation - T-INFO-110222	684
6.336. Research Project (Project, 2nd Semester) - Scientific Report - T-INFO-110223	685
6.337. Risk Management in Industrial Supply Networks - T-WIWI-102826	686
6.338. Roadmapping - T-WIWI-102853	687
6.339. Robotics - Practical Course - T-INFO-105107	688
6.340. Robotics I - Introduction to Robotics - T-INFO-108014	689
6.341. Robotics II: Humanoid Robotics - T-INFO-105723	690
6.342. Robotics III - Sensors and Perception in Robotics - T-INFO-109931	691
6.343. Security - T-INFO-101371	692
6.344. Selected Issues in Critical Information Infrastructures - T-WIWI-109251	693
6.345. Selected Legal Issues of Internet Law - T-INFO-108462	694
6.346. Semantic Web Technologies - T-WIWI-110848	695
6.347. Seminar in Business Administration A (Master) - T-WIWI-103474	698
6.348. Seminar in Economic Policy - T-WIWI-102789	711
6.349. Seminar in Economics A (Master) - T-WIWI-103478	712
6.350. Seminar in Informatics B (Master) - T-WIWI-103480	715
6.351. Seminar in Information Systems (Master) - T-WIWI-109827	722
6.352. Seminar in Operations Research A (Master) - T-WIWI-103481	726
6.353. Seminar in Statistics A (Master) - T-WIWI-103483	728
6.354. Seminar Informatics A - T-INFO-104336	729
6.355. Seminar Methods along the Innovation process - T-WIWI-110987	731
6.356. Seminar: Governance, Risk & Compliance - T-INFO-102047	732
6.357. Seminar: Legal Studies I - T-INFO-101997	733
6.358. Service Analytics A - T-WIWI-105778	735
6.359. Service Design Thinking - T-WIWI-102849	737
6.360. Service Innovation - T-WIWI-102641	738
6.361. Signals and Codes - T-INFO-101360	740
6.362. Simulation Game in Energy Economics - T-WIWI-108016	741
6.363. Smart Energy Infrastructure - T-WIWI-107464	742
6.364. Smart Grid Applications - T-WIWI-107504	743
6.365. Social Choice Theory - T-WIWI-102859	744
6.366. Sociotechnical Information Systems Development - T-WIWI-109249	745
6.367. Software Architecture and Quality - T-INFO-101381	747
6.368. Software Development for Modern, Parallel Platforms - T-INFO-101339	748
6.369. Software Engineering II - T-INFO-101370	749
6.370. Software Lab Parallel Numerics - T-INFO-105988	750
6.371. Software Product Line Engineering - T-INFO-111017	751
6.372. Software Quality Management - T-WIWI-102895	752
6.373. Software-Evolution - T-INFO-101256	754
6.374. Spatial Economics - T-WIWI-103107	755
6.375. Special Topics in Information Systems - T-WIWI-109940	757
6.376. Statistical Modeling of Generalized Regression Models - T-WIWI-103065	758
6.377. Stochastic Calculus and Finance - T-WIWI-103129	759
6.378. Stochastic Information Processing - T-INFO-101366	761
6.379. Strategic Finance and Technology Change - T-WIWI-110511	762
6.380. Strategic Foresight China - T-WIWI-110986	763
6.381. Strategic Management of Information Technology - T-WIWI-102669	764
6.382. Strategy and Management Theory: Developments and "Classics" - T-WIWI-106190	765

6.383. Subdivision Algorithms - T-INFO-103551	768
6.384. Subdivision Algorithms - T-INFO-103550	769
6.385. Supplement Enterprise Information Systems - T-WIWI-110346	770
6.386. Supply Chain Management in the Automotive Industry - T-WIWI-102828	771
6.387. Supply Chain Management with Advanced Planning Systems - T-WIWI-102763	772
6.388. Symmetric Encryption - T-INFO-101390	774
6.389. Tax Law I - T-INFO-101315	775
6.390. Tax Law II - T-INFO-101314	776
6.391. Technologies for Innovation Management - T-WIWI-102854	777
6.392. Technology Assessment - T-WIWI-102858	778
6.393. Telecommunication and Internet Economics - T-WIWI-102713	779
6.394. Telecommunications Law - T-INFO-101309	780
6.395. Telematics - T-INFO-101338	781
6.396. Testing Digital Systems I - T-INFO-101388	783
6.397. Testing Digital Systems II - T-INFO-105936	784
6.398. The negotiation of open innovation - T-WIWI-110867	785
6.399. Theory of Endogenous Growth - T-WIWI-102785	786
6.400. Topics in Experimental Economics - T-WIWI-102863	788
6.401. Trademark and Unfair Competition Law - T-INFO-101313	789
6.402. Transport Economics - T-WIWI-100007	790
6.403. Ubiquitous Computing - T-INFO-101326	791
6.404. Valuation - T-WIWI-102621	792
6.405. Visualization - T-INFO-101275	793
6.406. Wearable Robotic Technologies - T-INFO-106557	794
6.407. Web App Programming for Finance - T-WIWI-110933	795
6.408. Web Applications and Service-Oriented Architectures (II) - T-INFO-101271	796
6.409. Web Science - T-WIWI-103112	797
6.410. Workshop Business Wargaming – Analyzing Strategic Interactions - T-WIWI-106189	798
6.411. Workshop Current Topics in Strategy and Management - T-WIWI-106188	800

1 General information

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

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.

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

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

Personal consultation: KIT Department of Informatics, Informatics Study Program Service
Informatics Building 50.34, EG, Rooms 001.2/.3
bachelor@wirtschaftsinformatik.kit.edu

editorial responsibility: Lena Coerdts, KIT Department of Informatics
Phone: +49 721 608-48893
modulhandbuch@informatik.kit.edu

for master students

Personal consultation: KIT Department of Economics and Management, Examination Office
Gebäude am Kronenplatz Building 05.20, 3rd floor, Room 3C-05
master@wirtschaftsinformatik.kit.edu

editorial responsibility: Dr. André Wiesner, KIT Department of Economics and Management
Phone: +49 721 608-44061
modul@wiwi.kit.edu

2 Study plan

The Master's programme in Information Systems has a standard duration of four semesters and comprises 120 credit points. Depending on personal interests and goals, the specialist knowledge acquired in the Bachelor's programme can be expanded and deepened within the scope of the study plan.

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

Semester	Leistungs- punkte	Wirtschaftsinformatik	Informatik	Wirtschaftswissenschaften	Rechtswissenschaften	Seminare	Masterarbeit
1	33	Wirtschaftsinformatik 9 LP	Informatik 4 LP	Wirtschafts- wissenschaften 9 LP	Rechtswissenschaften 9 LP	Seminarmodul Wirtschafts- informatik Informatik Wirtschafts- wissenschaften Rechts- wissenschaften 3 LP + 3 LP*	
			Informatik 4 LP				
			Informatik 4 LP		Rechtswissenschaften 9 LP		
			Informatik 4 LP				
2	27		Informatik 8 LP				
3	30	Wirtschaftsinformatik 9 LP	Informatik 6 LP	Wirtschafts- wissenschaften 9 LP			
4	30						Masterarbeit 30 LP
	120	18	30	18	18	6	30

* In Summe sind 2 Seminare zu wählen. Die Vermittlung von überfachlichen Qualifikationen erfolgt integrativ im Rahmen der fachwissenschaftlichen Module.

Figure 2: Structure of the Master's programme in Information Systems (german)

Within the scope of the master's programme, modules from the subjects of Information Systems, Informatics, Economics and Law are to be completed and a master's thesis is to be written.

In the subject Informatics, modules with a total volume of 30 credit points are to be taken. In the remaining subjects Information Systems, Economics and Law, modules with a total of 18 credit points must be proven.

In the subjects Information Systems, Informatics, Economics and Management and Law, two seminars of 3 LP each must be completed. The seminars have to be chosen from different subjects.

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 subject semester the selected module examinations are started or completed. However, it is recommended that all other academic achievements of the Master's examination be proven before the start of the Master's thesis.

All modules including options within the modules are described in the module handbook. WiWi seminars that can be attended as part of the seminar modules will be published on the Wiwi portal at <https://portal.wiwi.kit.edu/Seminare>.

3 Qualification goals

The KIT graduates of the interdisciplinary, four-semester Master's program in Information Systems have an in-depth research-oriented expertise in Information Systems and the related disciplines of Informatics, Economics and Law. This specialist knowledge is supplemented by subject-independent competences that can be applied across several disciplines. Depending on their profile, their qualifications are particularly suitable for interdisciplinary activities as IT managers, management consultants, technology entrepreneurs, process managers, company founders and for a further scientific career (scientist).

KIT business IT specialists are characterized by their interdisciplinary methodological competence and their innovative ability in shaping the digital transformation of business and society.

By combining their knowledge and competencies, they are able to independently recognize economic and information technology conditions as well as innovative development potentials for the digitization of processes, products and services and to implement them within the legal framework.

KIT business IT specialists design and develop interdisciplinary information goods and information systems from a socio-technical perspective with the aim of creating social and economic value through the digitisation of economy and society.

They are able to analyse and structure complex subject-relevant problems and requirements and develop tailor-made solutions and options for action.

They know how to identify the advantages and disadvantages of existing processes, models, technologies and approaches, compare them with alternatives, evaluate them critically and transfer them to new areas of application.

According to their needs, they can also combine, adapt or independently develop new solutions and implement them using innovative information and communication technologies. They can make and justify their decisions in a scientifically sound manner, taking into account social and ethical aspects.

They know how to critically interpret, validate, document and present the results obtained.

Graduates will be able to communicate with representatives at a scientific level and take on outstanding responsibility in a team.

4 Field of study structure

Mandatory	
Master Thesis	30 CR
Information Systems	18 CR
Informatics	30 CR
Economics and Management	18 CR
Law	18 CR
Seminars	6 CR

4.1 Master Thesis

Credits
30

Mandatory	
M-WIWI-104833	Module Master Thesis 30 CR

4.2 Information Systems

Credits
18

Election block: Information Systems ()		
M-WIWI-104814	Information Systems: Analytical and Interactive Systems	9 CR
M-WIWI-104812	Information Systems: Engineering and Transformation	9 CR
M-WIWI-104813	Information Systems: Internet-based Markets and Services	9 CR

4.3 Informatics

Credits
30

Election block: Optional Modules Informatics ()		
M-INFO-103046	Access Control Systems: Foundations and Practice	4 CR
M-INFO-100795	Algorithm Engineering	5 CR
M-INFO-101173	Algorithms II	6 CR
M-INFO-102093	Algorithms for Ad-Hoc and Sensor Networks	5 CR
M-INFO-100031	Algorithms for Routing	5 CR
M-INFO-102094	Algorithms for Visualization of Graphs	5 CR
M-INFO-100797	Algorithms in Cellular Automata	5 CR
M-INFO-102110	Computational Geometry	6 CR
M-INFO-100762	Algorithmic Graph Theory	5 CR
M-INFO-100754	Computational Cartography	5 CR
M-INFO-102400	Algorithmic Methods for Network Analysis	5 CR
M-INFO-100768	Big Data Analytics	5 CR
M-INFO-102773	Big Data Analytics 2	3 CR
M-INFO-102226	Applied Differential Geometry	5 CR
M-INFO-103294	Wearable Robotic Technologies	4 CR
M-WIWI-105366	Artificial Intelligence	9 CR
M-INFO-100723	Asymmetric Encryption Schemes <i>First usage possible until 3/31/2021.</i>	3 CR
M-INFO-104447	Automated Planning and Scheduling	5 CR
M-INFO-100826	Automated Visual Inspection and Image Processing	6 CR
M-INFO-100764	Accessibility - Assistive Technologies for Visually Impaired Persons	3 CR
M-INFO-100755	Image Data Compression	3 CR
M-INFO-100814	Biologically Inspired Robots	3 CR
M-INFO-102968	Biometric Systems for Person Identification	3 CR
M-INFO-100856	Computer Graphics	6 CR
M-INFO-100810	Computer Vision for Human-Computer Interaction	6 CR
M-WIWI-104403	Critical Digital Infrastructures	9 CR
M-INFO-100739	Data and Storage Management	4 CR
M-INFO-104045	Data Privacy: From Anonymization to Access Control	3 CR
M-INFO-101662	Practical Course: Database Systems	4 CR
M-INFO-100780	Deployment of Database Systems	5 CR
M-INFO-100769	Datamanagement in the Cloud	5 CR
M-INFO-105334	Decentralized Systems: Fundamentals, Modeling, and Applications neu	4 CR
M-INFO-104099	Deep Learning for Computer Vision	3 CR
M-INFO-104460	Deep Learning and Neural Networks	6 CR
M-INFO-100803	Real-Time Systems	6 CR
M-INFO-100736	Introduction to Video Analysis	3 CR
M-INFO-101885	Energy Informatics 1	5 CR
M-INFO-103044	Energy Informatics 2	5 CR
M-INFO-104117	Energy System Modelling	4 CR
M-INFO-104381	Decision Procedures with Applications to Software Verification	5 CR
M-INFO-100759	Embedded Systems for Multimedia and Image Processing	3 CR
M-INFO-100798	Empirical Software Engineering	4 CR
M-INFO-100831	Design and Architectures of Embedded Systems (ES2)	3 CR
M-WIWI-101477	Development of Business Information Systems	9 CR
M-INFO-102731	Advanced Data Structures	5 CR

M-INFO-100799	Formal Systems	6 CR
M-INFO-100841	Formal Systems II: Theory	5 CR
M-INFO-100744	Formal Systems II: Application	5 CR
M-INFO-105413	Practical Course on Network Security Research	3 CR
M-INFO-100725	Human Brain and Central Nervous System: Anatomy, Information Transfer, Signal Processing, Neurophysiology and Therapy	3 CR
M-INFO-100730	Geometric Optimization	3 CR
M-INFO-100753	Design Principles for Interactive Real-Time Systems	3 CR
M-INFO-100847	Principles of Automatic Speech Recognition	6 CR
M-INFO-100758	Graph Partitioning and Graph Clustering in Theory and Practice	5 CR
M-INFO-101573	Hands-on Bioinformatics Practical	3 CR
M-INFO-100822	Heterogeneous Parallel Computing Systems	3 CR
M-WIWI-104520	Human Factors in Security and Privacy	9 CR
M-INFO-102560	Humanoid Robots - Practical Course	3 CR
M-INFO-100895	Information Processing in Sensor Networks	6 CR
M-INFO-100791	Innovative Concepts for Programming Industrial Robots	4 CR
M-WIWI-101456	Intelligent Systems and Services	9 CR
M-INFO-100747	Integrated Network and Systems Management	4 CR
M-INFO-100732	Interactive Computer Graphics	5 CR
M-INFO-100800	Internet of Everything	4 CR
M-INFO-100749	Introduction to Bioinformatics for Computer Scientists	3 CR
M-INFO-100786	IT-Security Management for Networked Systems	5 CR
M-INFO-100819	Cognitive Systems	6 CR
M-INFO-101575	Computational Complexity Theory, with a View Towards Cryptography	6 CR
M-INFO-100728	Context Sensitive Systems	5 CR
M-INFO-100720	Mechanisms and Applications of Workflow Systems	5 CR
M-INFO-100742	Cryptographic Voting Schemes	3 CR
M-INFO-100837	Curves and Surfaces in CAD I	5 CR
M-INFO-101231	Curves and Surfaces for Geometric Design	5 CR
M-INFO-101213	Curves and Surfaces in CAD III	5 CR
M-INFO-100840	Localization of Mobile Agents	6 CR
M-INFO-100807	Low Power Design	3 CR
M-INFO-100848	Machine Translation	6 CR
M-WIWI-103356	Machine Learning	9 CR
M-INFO-105252	Machine Learning - Basic Methods	5 CR
M-INFO-103154	Multi-dimensional Signal Processing and Image Exploitation with Graphic Cards and Other Manycore-Processors	3 CR
M-INFO-100729	Human Computer Interaction	6 CR
M-INFO-100824	Human-Machine-Interaction in Anthropomatics: Basics	3 CR
M-INFO-100785	Mobile Communication	4 CR
M-INFO-100828	Models of Parallel Processing	5 CR
M-INFO-100741	Model-Driven Software Development	3 CR
M-INFO-100788	Multicore Computers and Computer Clusters	4 CR
M-INFO-100825	Pattern Recognition	3 CR
M-INFO-100812	Meshes and Point Clouds	3 CR
M-INFO-100782	Network Security: Architectures and Protocols	4 CR
M-INFO-100784	Next Generation Internet	4 CR
M-INFO-100830	Optimization and Synthesis of Embedded Systems (ES1)	3 CR
M-INFO-100808	Parallel Computer Systems and Parallel Programming	4 CR
M-INFO-100796	Parallel Algorithms	5 CR
M-INFO-100731	Photorealistic Rendering	5 CR

M-INFO-104164	Access Control Systems Lab	4 CR
M-INFO-104699	Practical Course: Hot Research Topics in Computer Graphics	6 CR
M-INFO-102072	Laboratory Course Algorithm Engineering	6 CR
M-INFO-102807	Practical Course: Analysis of Complex Data Sets	4 CR
M-INFO-101663	Practical Course: Analyzing Big Data	6 CR
M-INFO-103166	Application Security Lab	4 CR
M-INFO-102411	Practical Course Automatic Speech Recognition	3 CR
M-INFO-103050	Practical Course Data Management and Data Analysis	4 CR
M-INFO-102353	Practical Course Circuit Design with Intel Galileo	3 CR
M-INFO-103138	Lab Course: Natural Language Processing and Software Engineering	5 CR
M-INFO-103047	Practical Course Decentralized Systems and Network Services	4 CR
M-INFO-102570	Practical Course: Digital Design & Test Automation Flow	3 CR
M-INFO-101667	Practical Course: Discrete Freeform Surfaces	6 CR
M-INFO-103506	Lab: Efficient parallel C++	6 CR
M-INFO-103808	Lab: Designing Embedded Systems	4 CR
M-INFO-101631	Lab: Designing Embedded Application-Specific Processors	4 CR
M-INFO-102568	Practical Course Research Project: Hands-on Anthropomatics	8 CR
M-INFO-102661	Practical Course FPGA Programming	3 CR
M-INFO-100724	Practical Course: General-Purpose Computation on Graphics Processing Units	3 CR
M-INFO-101666	Practical Course: Geometric Modeling	3 CR
M-INFO-103302	Lab: Graph Visualization in Practice	5 CR
M-INFO-105384	Praktikum: Graphics and Game Development	6 CR
M-INFO-104254	Practical: Course Engineering Approaches to Software Development	6 CR
M-INFO-103706	Lab: Internet of Things (IoT)	4 CR
M-INFO-103128	Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data	4 CR
M-INFO-101559	Laboratory in Cryptoanalysis	3 CR
M-INFO-101558	Laboratory in Cryptography	3 CR
M-INFO-104031	Lab: Low Power Design and Embedded Systems	3 CR
M-INFO-102977	Mobile Robots – Practical Course	6 CR
M-INFO-101579	Practical Course Model-Driven Software Development	6 CR
M-INFO-103143	Practical Course: Neural Network Exercises	3 CR
M-INFO-102414	Natural Language Dialog Systems	3 CR
M-INFO-101889	Practical Course Applied Telematics	6 CR
M-INFO-101537	Practical Course: Programme Verification	3 CR
M-INFO-102092	Practical Course Protocol Engineering	4 CR
M-INFO-101560	Laboratory in Security	4 CR
M-INFO-103235	Practical Course: Smart Data Analytics	6 CR
M-INFO-103227	Practical Course: Virtual Neurorobotics in the Human Brain Project	3 CR
M-INFO-101567	Practical Course: Visual Computing 2	6 CR
M-INFO-101635	Practical Course: Web Applications and Service-Oriented Architectures (II)	5 CR
M-INFO-104357	Practical Introduction to Hardware Security	6 CR
M-INFO-105037	Research Project (Project, 1st Semester)	10 CR
M-INFO-105038	Research Project (Project, 2nd Semester)	10 CR
M-INFO-100985	Multicore Programming in Practice: Tools, Models, Languages	6 CR
M-INFO-102966	Practical Course Computer Vision for Human-Computer Interaction	6 CR
M-INFO-104072	Lab Course Heterogeneous Computing	6 CR
M-INFO-102383	Project Lab: Image Analysis and Fusion	6 CR
M-INFO-102224	Practical Project Robotics and Automation I (Software)	6 CR
M-INFO-102230	Practical Project Robotics and Automation II (Hardware)	6 CR
M-INFO-101891	Practical Course Software Defined Networking	6 CR

M-INFO-104894	Reinforcement Learning and Neural Networks in Robotics	3 CR
M-INFO-101853	Rationale Splines	5 CR
M-INFO-101857	Rationale Splines	3 CR
M-INFO-100794	Randomized Algorithms	5 CR
M-INFO-100818	Computer Architecture	6 CR
M-INFO-100721	Reconfigurable and Adaptive Systems	3 CR
M-INFO-100850	Reliable Computing I	3 CR
M-INFO-100763	Requirements Engineering	3 CR
M-INFO-102522	Robotics - Practical Course	6 CR
M-INFO-100893	Robotics I - Introduction to Robotics	6 CR
M-INFO-102756	Robotics II: Humanoid Robotics	3 CR
M-INFO-104897	Robotics III - Sensors and Perception in Robotics	3 CR
M-INFO-100820	Medical Robotics	3 CR
M-INFO-102825	Practical SAT Solving	5 CR
M-INFO-100834	Security	6 CR
M-INFO-100823	Signals and Codes	3 CR
M-INFO-100844	Software Architecture and Quality	3 CR
M-INFO-102998	Software Lab Parallel Numerics	6 CR
M-INFO-100802	Software Development for Modern, Parallel Platforms	3 CR
M-INFO-105471	Software Product Line Engineering neu	3 CR
M-INFO-100833	Software Engineering II	6 CR
M-INFO-100719	Software-Evolution	3 CR
M-INFO-100829	Stochastic Information Processing	6 CR
M-INFO-100735	Natural Language Processing and Software Engineering	3 CR
M-INFO-100853	Symmetric Encryption <i>First usage possible until 9/30/2022.</i>	3 CR
M-INFO-100801	Telematics	6 CR
M-INFO-100851	Testing Digital Systems I	3 CR
M-INFO-102962	Testing Digital Systems II	3 CR
M-INFO-100789	Ubiquitous Computing	5 CR
M-WIWI-101458	Ubiquitous Computing	9 CR
M-INFO-100839	Fuzzy Sets	6 CR
M-INFO-101863	Subdivision Algorithms	3 CR
M-INFO-101864	Subdivision Algorithms	5 CR
M-INFO-100899	Natural Language Processing and Dialog Modeling	3 CR
M-INFO-100761	Distributed Computing	4 CR
M-INFO-100738	Visualization	5 CR
M-WIWI-105368	Web and Data Science	9 CR
M-INFO-100734	Web Applications and Service-Oriented Architectures (II)	4 CR
M-WIWI-101455	Web Data Management	9 CR

4.4 Economics and Management

Credits
18

Election block: Business Administration ()		
M-WIWI-101410	Business & Service Engineering	9 CR
M-WIWI-101498	Management Accounting	9 CR
M-WIWI-101510	Cross-Functional Management Accounting	9 CR
M-WIWI-101470	Data Science: Advanced CRM	9 CR
M-WIWI-103117	Data Science: Data-Driven Information Systems	9 CR
M-WIWI-103118	Data Science: Data-Driven User Modeling	9 CR
M-WIWI-101647	Data Science: Evidence-based Marketing	9 CR
M-WIWI-105032	Data Science for Finance	9 CR
M-WIWI-104080	Designing Interactive Information Systems	9 CR
M-WIWI-102808	Digital Service Systems in Industry	9 CR
M-WIWI-103720	eEnergy: Markets, Services and Systems	9 CR
M-WIWI-101409	Electronic Markets	9 CR
M-WIWI-101451	Energy Economics and Energy Markets	9 CR
M-WIWI-101452	Energy Economics and Technology	9 CR
M-WIWI-101488	Entrepreneurship (EnTechnon)	9 CR
M-WIWI-101482	Finance 1	9 CR
M-WIWI-101483	Finance 2	9 CR
M-WIWI-101480	Finance 3	9 CR
M-WIWI-105036	FinTech Innovations	9 CR
M-WIWI-101471	Industrial Production II	9 CR
M-WIWI-101412	Industrial Production III	9 CR
M-WIWI-104068	Information Systems in Organizations	9 CR
M-WIWI-101507	Innovation Management	9 CR
M-WIWI-101446	Market Engineering	9 CR
M-WIWI-105312	Marketing and Sales Management	9 CR
M-WIWI-101506	Service Analytics	9 CR
M-WIWI-101503	Service Design Thinking	9 CR
M-WIWI-102754	Service Economics and Management	9 CR
M-WIWI-102806	Service Innovation, Design & Engineering	9 CR
M-WIWI-101448	Service Management	9 CR
M-WIWI-103119	Advanced Topics in Strategy and Management	9 CR
Election block: Economics ()		
M-WIWI-101453	Applied Strategic Decisions	9 CR
M-WIWI-101504	Collective Decision Making	9 CR
M-WIWI-101505	Experimental Economics	9 CR
M-WIWI-101478	Innovation and Growth	9 CR
M-WIWI-101514	Innovation Economics	9 CR
M-WIWI-101500	Microeconomic Theory	9 CR
M-WIWI-101406	Network Economics	9 CR
M-WIWI-101502	Economic Theory and its Application in Finance	9 CR
M-WIWI-105414	Statistics and Econometrics II	9 CR
M-WIWI-101468	Environmental Economics	9 CR
M-WIWI-101485	Transport Infrastructure Policy and Regional Development	9 CR
M-WIWI-101511	Advanced Topics in Public Finance	9 CR
M-WIWI-101496	Growth and Agglomeration	9 CR
Election block: Operations Research ()		

M-WIWI-101473	Mathematical Programming	9 CR
M-WIWI-102832	Operations Research in Supply Chain Management	9 CR
M-WIWI-102805	Service Operations	9 CR
M-WIWI-103289	Stochastic Optimization	9 CR
Election block: Statistics ()		
M-WIWI-101637	Analytics and Statistics	9 CR
M-WIWI-101638	Econometrics and Statistics I	9 CR
M-WIWI-101639	Econometrics and Statistics II	9 CR
M-WIWI-105414	Statistics and Econometrics II	9 CR

4.5 Law

Credits
18

Election block: Compulsory Elective Module in Law ()		
M-INFO-104810	European and National Technology Law	9 CR
M-INFO-101242	Governance, Risk & Compliance	9 CR
M-INFO-101217	Public Business Law	9 CR
M-INFO-101216	Private Business Law	9 CR
M-INFO-101215	Intellectual Property Law	9 CR

4.6 Seminars

Credits
6

Election notes

In the subjects Information Systems, Informatics, Economics and Management and Law, two seminars of 3 LP each must be completed. The seminars have to be chosen from different subjects.

Election block: Seminars (at most 2 items)		
M-INFO-102822	Seminar Module Informatics	3 CR
M-INFO-101218	Seminar Module Law	3 CR
M-WIWI-104815	Seminar Information Systems	3 CR
M-WIWI-102736	Seminar Module Economic Sciences	3 CR

5 Modules

M

5.1 Module: Access Control Systems Lab [M-INFO-104164]

Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: Informatics

Credits
4

Recurrence
Each summer term

Language
German/English

Level
4

Version
1

Mandatory			
T-INFO-108611	Access Control Systems Lab	4 CR	Hartenstein

Content

An information security model defines access rights that express for a given system which subjects are allowed to perform which actions on which objects. A system is said to be secure with respect to a given information security model, if it enforces the corresponding access rights. Thus, access control modeling and access control systems represent the fundamental building blocks of secure services, be it on the Web or in the Internet of Everything.

In this master-level course, we thoroughly investigate the evolution of access control models (access control matrix, role-based access control, attribute access control) and describe usage control models as a unified framework for both access control and digital rights management. The students experiment with real-world access control protocols and technologies and thus apply the contents of the lecture "Access Control Systems: Foundations and Practice" in a real-world context.

Workload

6 x (2h [Lab] + 10h [Task] + 2h [Troubleshooting] + 4h [Report] + 2h [Buffer]) = 120h

M

5.2 Module: Access Control Systems: Foundations and Practice [M-INFO-103046]

Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Each summer term

Language
English

Level
4

Version
1

Mandatory			
T-INFO-106061	Access Control Systems: Foundations and Practice	4 CR	Hartenstein

M**5.3 Module: Accessibility - Assistive Technologies for Visually Impaired Persons [M-INFO-100764]****Responsible:** Prof. Dr.-Ing. Rainer Stiefelhagen**Organisation:** KIT Department of Informatics**Part of:** [Informatics](#)**Credits**
3**Recurrence**
Each summer term**Duration**
1 term**Language**
German**Level**
4**Version**
1

Mandatory			
T-INFO-101301	Accessibility - Assistive Technologies for Visually Impaired Persons	3 CR	Stiefelhagen

M

5.4 Module: Advanced Data Structures [M-INFO-102731]

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

Credits
5

Recurrence
Each summer term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-105687	Advanced Data Structures	5 CR	Sanders

M

5.5 Module: Advanced Topics in Public Finance [M-WIWI-101511]

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

Credits
9

Recurrence
Each term

Duration
2 semester

Language
German

Level
4

Version
5

Mandatory			
T-WIWI-102740	Public Management	4,5 CR	Wigger
Election block: Supplementary Courses (between 4,5 and 5 credits)			
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	4,5 CR	Gutekunst, Wigger
T-WIWI-102739	Public Revenues	4,5 CR	Wigger

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

- understands the theory and politics of taxation
- has knowledge in the area of public debt.
- understands efficiency problems of public organizations.
- is able to work on fiscal problems.

Prerequisites

The course "Public Management" is compulsory and must be examined.

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.

In the course of the lectures within this module the students achieve knowledge in the areas of public revenues, national and international law of taxation and theory of public sector organizations.

Recommendation

Basic knowledge in the area of public finance and public management is required.

Annotation

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

Students who successfully passed the exam in „Public Management“ before the introduction of the module “Advanced Topics in Public Finance” in winter term 2014/15 are allowed to take both courses “Public Revenues” and “Specific Aspects in Taxation”.

Workload

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

M**5.6 Module: Advanced Topics in Strategy and Management [M-WIWI-103119]**

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
1

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-106188	Workshop Current Topics in Strategy and Management	3 CR	Lindstädt
T-WIWI-106189	Workshop Business Wargaming – Analyzing Strategic Interactions	3 CR	Lindstädt
T-WIWI-106190	Strategy and Management Theory: Developments and “Classics”	3 CR	Lindstädt

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

Students

- are able to analyze business strategies and derive recommendations using appropriate frameworks
- learn to express their position through compelling reasoning in structured discussions
- are qualified to critically examine recent research topics in the field of strategic management
- can derive own conclusions from less structured information by using interdisciplinary knowledge

Prerequisites

None

Content

The module is divided into three main topics:

The students

- analyze and discuss a wide range of business strategies on the basis of collectively selected case studies.
- participate in a business wargaming workshop and analyze strategic interactions.
- write a paper about current topics in the field of strategic management theory.

Recommendation

None

Annotation

This course is admission restricted. After being admitted to one course of this module, the participation at the other courses will be guaranteed.

Every course of this module will be at least offered every second term. Thus, it will be possible to complete the module within two terms.

M

5.7 Module: Algorithm Engineering [M-INFO-100795]

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

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
5

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101332	Algorithm Engineering	5 CR	Sanders, Wagner

M

5.8 Module: Algorithmic Graph Theory [M-INFO-100762]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Irregular

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-103588	Algorithmic Graph Theory	5 CR	Wagner

M**5.9 Module: Algorithmic Methods for Network Analysis [M-INFO-102400]**

Responsible: Dr. rer. nat. Torsten Ueckerdt
Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
5

Recurrence
Irregular

Language
German

Level
4

Version
1

Mandatory			
T-INFO-104759	Algorithmic Methods for Network Analysis	5 CR	Ueckerdt, Wagner

Workload

150 h

M

5.10 Module: Algorithms for Ad-Hoc and Sensor Networks [M-INFO-102093]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Irregular

Language
German

Level
4

Version
1

Mandatory			
T-INFO-104388	Algorithms for Ad-Hoc and Sensor Networks	5 CR	Wagner

M

5.11 Module: Algorithms for Routing [M-INFO-100031]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-100002	Algorithms for Routing	5 CR	Wagner

M

5.12 Module: Algorithms for Visualization of Graphs [M-INFO-102094]

Responsible: Dr. rer. nat. Torsten Ueckerdt
Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
5

Recurrence
Irregular

Language
German

Level
4

Version
1

Mandatory			
T-INFO-104390	Algorithms for Visualization of Graphs	5 CR	Wagner

M**5.13 Module: Algorithms II [M-INFO-101173]**

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

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
6

Recurrence
Each winter term

Duration
1 semester

Language
German

Level
4

Version
1

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

M

5.14 Module: Algorithms in Cellular Automata [M-INFO-100797]

Responsible: Thomas Worsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101334	Algorithms in Cellular Automata	5 CR	Worsch

M

5.15 Module: Analytics and Statistics [M-WIWI-101637]

Responsible: Prof. Dr. Oliver Grothe
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Statistics)

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
2

Mandatory			
T-WIWI-103123	Advanced Statistics	4,5 CR	Grothe
Election block: Supplementary Courses (between 4,5 and 5 credits)			
T-WIWI-106341	Machine Learning 2 – Advanced Methods	4,5 CR	Zöllner
T-WIWI-103124	Multivariate Statistical Methods	4,5 CR	Grothe

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

A Student

- Deepens the knowledge of descriptive and inferential statistics.
- Deals with simulation methods.
- Learns basic and advanced methods of statistical analysis of multivariate and high-dimensional data.

Prerequisites

The course "*Advanced Statistics*" is compulsory.

Content

- Deriving estimates and testing hypotheses
- Stochastic processes
- Multivariate statistics, copulas
- Dependence measures
- Dimension reduction
- High-dimensional methods
- Prediction

Annotation

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

Workload

The total workload for this module is approximately 270 hours.

M

5.16 Module: Application Security Lab [M-INFO-103166]

Responsible: Dr. Willi Geiselmann
 Prof. Dr. Jörn Müller-Quade

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
4

Recurrence
Each winter term

Language
German/English

Level
4

Version
1

Mandatory			
T-INFO-106289	Application Security Lab	4 CR	Geiselmann, Müller-Quade

M

5.17 Module: Applied Differential Geometry [M-INFO-102226]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each term

Language
German

Level
4

Version
2

Mandatory			
T-INFO-104546	Applied Differential Geometry	4 CR	Prautzsch
T-INFO-111000	Applied Differential Geometry - Practical	1 CR	Prautzsch

M

5.18 Module: Applied Strategic Decisions [M-WIWI-101453]

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

Credits
9

Recurrence
Each term

Language
German/English

Level
4

Version
4

Mandatory			
T-WIWI-102861	Advanced Game Theory	4,5 CR	Ehrhart, Puppe, Reiß
Election block: Supplementary Courses (between 4,5 and 5 credits)			
T-WIWI-102613	Auction Theory	4,5 CR	Ehrhart
T-WIWI-102614	Experimental Economics	4,5 CR	Weinhardt
T-WIWI-102622	Corporate Financial Policy	4,5 CR	Ruckes
T-WIWI-102623	Financial Intermediation	4,5 CR	Ruckes
T-WIWI-102640	Market Engineering: Information in Institutions	4,5 CR	Weinhardt
T-WIWI-102862	Predictive Mechanism and Market Design	4,5 CR	Reiß
T-WIWI-105781	Incentives in Organizations	4,5 CR	Nieken

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

Students

- can model and analyze complex situations of strategic interaction using advanced game theoretic concepts;
- are provided with essential and advanced game theoretic solution concepts on a rigorous level and can apply them to understand real-life problems;
- learn about the experimental method, ranging from designing an economic experiment to data analysis.

Prerequisites

The course "Advanced Game Theory" is obligatory. Exception: The course "Introduction to Game Theory" was completed. Even those who have already successfully proven "Advanced Game Theory" in another master module can take the module. In this case you can choose freely from the rest of the offer. Registration for the last examination in the module is done by the Faculty Examination Office.

Content

The module provides solid skills in game theory and offers a broad range of game theoretic applications. To improve the understanding of theoretical concepts, it pays attention to empirical evidence as well.

Recommendation

Basic knowledge in game theory is assumed.

Annotation

The course *Predictive Mechanism and Market Design* is not offered each year.

Workload

The total workload for this module is approximately 270 hours. The exact distribution is made according to the credit points of the courses of the module.

M

5.19 Module: Artificial Intelligence [M-WIWI-105366]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: Informatics

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

Election block: Compulsory Elective Courses (at least 2 items)			
T-WIWI-102666	Knowledge Discovery	4,5 CR	Sure-Vetter
T-WIWI-110848	Semantic Web Technologies	4,5 CR	Sure-Vetter
T-WIWI-110548	Advanced Lab Informatics (Master)	4,5 CR	Professorenschaft des Fachbereichs Informatik

Competence Certificate

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

Competence Goal

The student

- understands the concepts behind Semantic Web and Linked Data technologies
- develops ontologies to be employed in semantic web-based applications and chooses suitable representation languages,
- is familiar with approaches in the area of knowledge representation and modelling,
- is able to transfer the methods and technologies of semantic web technologies to new application sectors,
- evaluates the potential of semantic web for new application sectors,
- understands the challenges in the areas of Data and system integration on the web is able to develop solutions.
- know the basics of machine learning, data mining and knowledge discovery
- can design, train and evaluate systems that are capable of learning
- carry out knowledge discovery projects, taking into account algorithms, representations and applications.

Prerequisites

None

Content

The focus of the module is on Semantic Web Technologies as well as machine learning and data mining methods for knowledge acquisition from large databases.

The goal of the semantic web is the meaning (semantics) of data on the web for intelligent systems, e.g. in e-commerce and to make Internet portals usable. The representation of knowledge in the form of RDF and ontologies, the provision of data as Linked Data, as well as the request of data using SPARQL. In this lecture the basics of knowledge representation and processing for the corresponding technologies and application examples are presented.

The lecture "Knowledge Discovery" gives an overview of approaches of machine learning and data mining for knowledge extraction from large data sets. These are examined especially with regard to algorithms, applicability to different data representations and the use in real application scenarios.

Knowledge Discovery is an established research area with a large community that investigates methods for discovering patterns and regularities in large amounts of data, including unstructured text. A variety of methods exist to extract patterns and provide previously unknown insights. This information can be predictive or descriptive.

The lecture gives an overview of Knowledge Discovery. Specific techniques and methods, challenges and current and future research topics in this research area will be taught.

Contents of the lecture cover the entire machine learning and data mining process with topics on supervised and unsupervised learning and empirical evaluation. Covered learning methods range from classical approaches like decision trees, support vector machines and neural networks to selected approaches from current research. Learning problems considered include feature vector-based learning and text mining.

Workload

The total workload for this module is approximately 270 hours.

M

5.20 Module: Asymmetric Encryption Schemes [M-INFO-100723]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: [Informatics](#) (Usage until 3/31/2021)

Credits
3

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101260	Asymmetric Encryption Schemes	3 CR	Müller-Quade

M

5.21 Module: Automated Planning and Scheduling [M-INFO-104447]

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

Credits
5

Recurrence
Each winter term

Language
English

Level
4

Version
1

Mandatory			
T-INFO-109085	Automated Planning and Scheduling	5 CR	Sanders

M

5.22 Module: Automated Visual Inspection and Image Processing [M-INFO-100826]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
6

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101363	Automated Visual Inspection and Image Processing	6 CR	Beyerer

M

5.23 Module: Big Data Analytics [M-INFO-100768]

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

Credits
5

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101305	Big Data Analytics	5 CR	Böhm

M

5.24 Module: Big Data Analytics 2 [M-INFO-102773]

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

Credits
3

Recurrence
Irregular

Language
German

Level
4

Version
1

Mandatory			
T-INFO-105742	Big Data Analytics 2	3 CR	Böhm

M

5.25 Module: Biologically Inspired Robots [M-INFO-100814]

Responsible: Prof. Dr.-Ing. Rüdiger Dillmann
Dr.-Ing. Arne Rönnau

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101351	Biologically Inspired Robots	3 CR	Dillmann, Rönnau

M

5.26 Module: Biometric Systems for Person Identification [M-INFO-102968]

Responsible: Prof. Dr.-Ing. Rainer Stiefelhagen

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits

3

Recurrence

Each summer term

Language

German

Level

4

Version

1

Mandatory			
T-INFO-105948	Biometric Systems for Person Identification	3 CR	Stiefelhagen

M

5.27 Module: Business & Service Engineering [M-WIWI-101410]

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

Credits	Recurrence	Language	Level	Version
9	Each term	German/English	4	5

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-102639	Business Models in the Internet: Planning and Implementation	4,5 CR	Weinhardt
T-WIWI-102848	Personalization and Services	4,5 CR	Sonnenbichler
T-WIWI-110887	Practical Seminar: Service Innovation	4,5 CR	Satzger
T-WIWI-102847	Recommender Systems	4,5 CR	Geyer-Schulz
T-WIWI-102641	Service Innovation	4,5 CR	Satzger
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 student should

- learn to develop and implement new markets with regards to the technological progresses of information and communication technology and the increasing economic networking
- learn to restructure and develop new business processes in markets under those conditions
- understand service competition as a sustainable competitive strategy and understand the effects of service competition on the design of markets, products, processes and services.
- improve his statistics skills and apply them to appropriate cases
- learn to elaborate solutions in a team

Prerequisites

None

Content

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

Recommendation

None

Annotation

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

Workload

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

M**5.28 Module: Cognitive Systems [M-INFO-100819]**

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

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
6

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

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

M

5.29 Module: Collective Decision Making [M-WIWI-101504]

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

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	English	4	4

Election block: Compulsory Elective Courses ()			
T-WIWI-102740	Public Management	4,5 CR	Wigger
T-WIWI-102859	Social Choice Theory	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 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 able to model practical problems of the public sector and to analyze them with respect to positive and normative questions,
- understand individual incentives and social outcomes of different institutional designs,
- are familiar with the functioning and design of democratic elections and can analyze them with respect to their individual incentives.

Prerequisites

None

Content

The focus of the module is on mechanisms of public decisions making, including voting and the aggregation of preferences and judgements.

Workload

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

M

5.30 Module: Computational Cartography [M-INFO-100754]

Responsible: Dr. Martin Nöllenburg
Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
5

Recurrence
Irregular

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101291	Computational Cartography	5 CR	Nöllenburg, Wagner

M**5.31 Module: Computational Complexity Theory, with a View Towards Cryptography [M-INFO-101575]**

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

Credits
6

Recurrence
Irregular

Language
German

Level
4

Version
1

Mandatory			
T-INFO-103014	Computational Complexity Theory, with a View Towards Cryptography	6 CR	Hofheinz, Müller-Quade

M

5.32 Module: Computational Geometry [M-INFO-102110]

Responsible: Thomas Bläsius
 Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
6

Recurrence
Irregular

Language
German

Level
4

Version
2

Mandatory			
T-INFO-104429	Computational Geometry	6 CR	Wagner

M**5.33 Module: Computer Architecture [M-INFO-100818]**

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

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
6

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

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

M

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

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
6

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

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

M

5.35 Module: Computer Vision for Human-Computer Interaction [M-INFO-100810]

Responsible: Prof. Dr.-Ing. Rainer Stiefelhagen

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
6

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101347	Computer Vision for Human-Computer Interaction	6 CR	Stiefelhagen

M

5.36 Module: Context Sensitive Systems [M-INFO-100728]

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

Credits
5

Recurrence
Each summer term

Language
German

Level
4

Version
2

Mandatory			
T-INFO-107499	Context Sensitive Systems	5 CR	Beigl

M

5.37 Module: Critical Digital Infrastructures [M-WIWI-104403]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: Informatics

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

Mandatory			
T-WIWI-109248	Critical Information Infrastructures	4,5 CR	Sunyaev
Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-109246	Digital Health	4,5 CR	Sunyaev
T-WIWI-110144	Emerging Trends in Digital Health	4,5 CR	Sunyaev
T-WIWI-110143	Emerging Trends in Internet Technologies	4,5 CR	Sunyaev
T-WIWI-109249	Sociotechnical Information Systems Development	4,5 CR	Sunyaev
T-WIWI-109251	Selected Issues in Critical Information Infrastructures	4,5 CR	Sunyaev

Competence Certificate

The assessment is carried out as partial exams according to § 4 paragraph 2 Nr. 1 – Nr. 3 SPO of the examination regulation of the core course and further single courses of this module, whose sum of credits must meet 9 credits.

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 students ...

- have foundational knowledge about the design and operation of critical digital infrastructures
- have in-depth methodological knowledge in design science research and related scientific domains
- can distinguish between the challenges and opportunities of critical digital infrastructures in different domains
- can evaluate and improve sociotechnical systems
- combine theoretical and practical contents of the courses in the module to solve existing problems in the domain of critical digital infrastructures

Prerequisites

None

Content

Critical digital infrastructures are sociotechnical systems comprising essential software components and information systems with pivotal impact on individuals, organizations, governments, economies, and society. Critical information infrastructures require careful design, development, and evaluation to ensure reliable, secure, and purposeful operation. This module features a strong focus on different subject areas, including, but not limited to, internet technologies, health care, and information privacy. The lectures in the module introduce students to a domain relevant to critical digital infrastructures and the labs allow to gain hands-on experience in this interesting domain.

Recommendation

The courses in the module may be held in English. Participants should be well versed in written and spoken English.

The courses can be visited independently. Participants can start the module in the winter as well as in the summer term.

Programming skills may be required in some courses.

Experience in writing scientific papers is helpful but not required.

Annotation

This new module can be chosen from summer term 2018.

Workload

30 hours per ECTS

Total workload for 9 ECTS: approx. 270 hours

The exact allocation is made according to the credit points of the courses.

M

5.38 Module: Cross-Functional Management Accounting [M-WIWI-101510]

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

Credits	Recurrence	Language	Level	Version
9	Each term	German/English	4	8

Mandatory			
T-WIWI-102885	Advanced Management Accounting	4,5 CR	Wouters
Election block: Supplementary Courses (4,5 credits)			
T-WIWI-110179	Advanced Management Accounting 2	4,5 CR	Wouters
T-WIWI-105777	Business Intelligence Systems	4,5 CR	Mädche, Nadj, Toreini
T-WIWI-105781	Incentives in Organizations	4,5 CR	Nieken
T-WIWI-102835	Marketing Strategy Business Game	1,5 CR	Klarmann
T-WIWI-107720	Market Research	4,5 CR	Klarmann
T-WIWI-102883	Pricing	4,5 CR	Feurer
T-WIWI-109864	Product and Innovation Management	3 CR	Klarmann
T-WIWI-102621	Valuation	4,5 CR	Ruckes
T-WIWI-108651	Extraordinary additional course in the module Cross-Functional Management Accounting	4,5 CR	Wouters

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

Students will be able to apply advanced management accounting methods to managerial decision-making problems in marketing, finance, organization and strategy.

Prerequisites

The course "Advanced Management Accounting" is compulsory.

The additional courses can only be chosen after the compulsory course has been completed successfully.

Content

The module includes a course on several advanced management accounting methods that can be used for various decisions in operations and innovation management. By selecting another course, each student looks in more detail at one interface between management accounting a particular field in management, namely marketing, finance, or organization and strategy.

Recommendation

None

Annotation

The module "Cross-functional Management Accounting" always includes the compulsory course "Advanced Management Accounting." Students look at the interface between management accounting and another field in management. Students build the module by adding a course from the specified list. Students can also suggest another suitable course for this module for evaluation by the coordinator.

Workload

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

M

5.39 Module: Cryptographic Voting Schemes [M-INFO-100742]

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

Credits
3

Recurrence
Irregular

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101279	Cryptographic Voting Schemes	3 CR	Müller-Quade

M

5.40 Module: Curves and Surfaces for Geometric Design [M-INFO-101231]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-102041	Curves and Surfaces for Geometric Design II	5 CR	Prautzsch

M

5.41 Module: Curves and Surfaces in CAD I [M-INFO-100837]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101374	Curves and Surfaces in CAD I	5 CR	Prautzsch

M

5.42 Module: Curves and Surfaces in CAD III [M-INFO-101213]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each term

Duration
1 semester

Language
German

Level
4

Version
1

Mandatory			
T-INFO-102006	Curves and Surfaces in CAD II	5 CR	Prautzsch

M

5.43 Module: Data and Storage Management [M-INFO-100739]

Responsible: Prof. Dr. Bernhard Neumair
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101276	Data and Storage Management	4 CR	Neumair

M

5.44 Module: Data Privacy: From Anonymization to Access Control [M-INFO-104045]

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

Credits
3

Recurrence
Irregular

Language
German

Level
4

Version
1

Mandatory			
T-INFO-108377	Data Privacy: From Anonymization to Access Control	3 CR	Böhm

M

5.45 Module: Data Science for Finance [M-WIWI-105032]

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

Credits
9

Recurrence
Each winter term

Language
English

Level
4

Version
1

Mandatory			
T-WIWI-102878	Computational Risk and Asset Management	4,5 CR	Ulrich
T-WIWI-110213	Python for Computational Risk and Asset Management	4,5 CR	Ulrich

Competence Certificate

The module examination takes the form of an alternative exam assessment.

The alternative exam assessment consists of a Python-based "Takehome Exam". At the end of the third week of January, the student is given a "Takehome Exam" which he processes and sends back independently within 12 hours using Python. Precise instructions will be announced at the beginning of the course. The alternative exam assessment can be repeated a maximum of once. A timely repeat option takes place at the end of the third week in March of the same year. More detailed instructions will be given at the beginning of the course.

Competence Goal

The aim of the module is to use data science, machine learning and financial market theories to generate better investment, risk and asset management decisions. The student gets to know the characteristics of different asset classes in an application-oriented manner using real financial market data. We use Python and web scraping techniques to extract, visualize and examine patterns of publicly available financial market data. Interesting and non-public financial market data such as (option and futures data on shares and interest) are provided. Financial market theories are also discussed to improve data analysis through theoretical knowledge. Students get to know stock, interest rate, futures and options markets through the "data science glasses". Through "finance theory glasses" students understand how patterns can be communicated and interpreted using finance theory. Python is the link through which we bring data science and modern financial market modeling together.

Content

The course covers several topics, among them:

- Pattern detection in price and return data in equity, interest rate, futures and option markets
- Quantitative Portfolio Strategies
- Modeling Return Densities using tools from financial econometrics, data science and machine learning
- Valuation of equity, fixed-income, futures and options in a coherent framework to possibly exploit arbitrage opportunities
- Neural networks and Natural Language Processing

Recommendation

Basic knowledge of capital market theory.

Workload

The total workload for this module is 270 hours (9 credit points). The total number of hours resulting from income from studying online video, answering quizzes, studying Python notebooks, active and interactive "Python Data Sessions" and reading literature you have heard.

M

5.46 Module: Data Science: Advanced CRM [M-WIWI-101470]

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
5

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-109921	Advanced Machine Learning	4,5 CR	Geyer-Schulz, Nazemi
T-WIWI-102762	Business Dynamics	4,5 CR	Geyer-Schulz
T-WIWI-110915	Intelligent Agents and Decision Theory	4,5 CR	Geyer-Schulz
T-WIWI-103549	Intelligent CRM Architectures	4,5 CR	Geyer-Schulz
T-WIWI-102848	Personalization and Services	4,5 CR	Sonnenbichler
T-WIWI-102847	Recommender Systems	4,5 CR	Geyer-Schulz
T-WIWI-105778	Service Analytics A	4,5 CR	Fromm

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

The student

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

Prerequisites

None

Content

Building on the basics of CRM from the Bachelor's degree program, the module "Data Science: Advanced CRM" is focusing on the use of information technology and its related economic issues in the CRM environment. The course "Intelligent CRM Architectures" deals with the design of modern intelligent systems. The focus is on the software architecture and design patterns that are relevant to learning systems. It also covers important aspects of machine learning that complete the picture of an intelligent system. Examples of presented systems are "Taste Map"-architectures, "Counting Services", as well as architectures of "Business Games". The impact of management decisions in complex systems are considered in the course "Business dynamics". The understanding, modeling and simulation of complex systems allows the analysis, the goal-oriented design and the optimization of markets, business processes and regulations throughout the company. Specific problems of intelligent systems are covered in the courses "Personalization and Services", "Recommender Systems", "Service Analytics" and "Social Network Analysis in CRM". The content includes procedures and methods to create user-oriented services. The measurement and monitoring of service systems, the design of personalized offers, and the generation of recommendations based on the collected data of products and customers are discussed. The importance of user modeling and -recognition, data security and privacy are addressed as well.

Recommendation

None

Annotation

The module has been renamed to "Data Science: Advanced CRM" in winter term 2016/2017.

Workload

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

M

5.47 Module: Data Science: Data-Driven Information Systems [M-WIWI-103117]

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

Organisation: KIT Department of Economics and Management

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

Credits	Recurrence	Language	Level	Version
9	Each term	German/English	4	7

Election block: Compulsory Elective Courses ()			
T-WIWI-108715	Artificial Intelligence in Service Systems	4,5 CR	Satzger
T-WIWI-109863	Business Data Analytics: Application and Tools	4,5 CR	Weinhardt
T-WIWI-106187	Business Data Strategy	4,5 CR	Weinhardt
T-WIWI-105777	Business Intelligence Systems	4,5 CR	Mädche, Nadj, Toreini
T-WIWI-110918	Introduction to Bayesian Statistics for Analyzing Data	3 CR	Scheibehenne
T-WIWI-106207	Practical Seminar: Data-Driven Information Systems	4,5 CR	Mädche, Satzger, Setzer, Weinhardt

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.

Competence Goal

The student

- understands the strategic role of integrating, transforming, and analyzing large and complex enterprise data in modern business information systems and is capable of comparing and assessing strategic alternatives
- has the core skills to design, model, and control complex, inter-organisational analytical, processes, including various business functions as well as customers and markets
- understands the usage of performance indicators for a variety of controlling and management issues and is able to define models for generating the relevant performance indicators under considerations of data availability
- distinguishes different analytics methods and concepts and learn when to apply to better understand and anticipate business relationships and developments of industrial and in particular service companies to derive fact- and data- founded managerial actions and strategies.
- knows how to capture uncertainty in the data and how to appropriately consider and visualize uncertainty in decision support or business intelligence systems and analytical processes as a whole.

Prerequisites

None.

Content

The amount of business-related data available in modern enterprise information systems grows exponentially, and the various data sources are more and more integrated, transformed, and analyzed jointly to gain valuable business insights, pro-actively control and manage business processes, to leverage planning and decision making, and to provide appropriate, potentially novel services to customers based on relationships and developments observed in the data.

Also, data sources are more and more connected and single business unit that used to operate on separate data pools are now becoming highly integrated, providing tremendous business opportunities but also challenges regarding how the data should be represented, integrated, preprocessed, transformed, and finally used in analytics planning and decision processes.

The courses of this module equip the students with core skills to understand the strategic role of integrating, transforming, and analyzing large and complex enterprise data in modern business information systems. Students will be capable to designing, comparing, and evaluating strategic alternatives. Also, students will learn how to design, model, and control complex analytical processes, including various business functions of industrial and service companies including customers and markets. Students learn core skills to understand fundamental strategies for integrating analytic models and operative controlling mechanisms while ensuring the technical feasibility of the resulting information systems..

Furthermore, the student can distinguish different methods and concepts in the realm of data science and learns when to apply. She/he will know the means of characterizing and analyzing heterogeneous, high-dimensional data available data in data warehouses and external data sources to gain additional insights valuable for enterprise planning and decision making. Also, the students know how to capture uncertainty in the data and how to appropriately consider and visualize uncertainty in business information and business intelligence systems.

The module offers the opportunity to apply and deepen this knowledge in a seminar and hands-on tutorials that are offered with all lectures.

Texteintrag

Recommendation

Basic knowledge of Information Management, Operations Research, Descriptive Statistics, and Inferential Statistics is assumed.

Annotation

The course „Business Data Strategy“ can be chosen from winter term 2016 on.

M

5.48 Module: Data Science: Data-Driven User Modeling [M-WIWI-103118]

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

Credits
9

Recurrence
Each term

Language
German/English

Level
4

Version
5

Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-109863	Business Data Analytics: Application and Tools	4,5 CR	Weinhardt
T-WIWI-102614	Experimental Economics	4,5 CR	Weinhardt
T-WIWI-111109	KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics	4,5 CR	Weinhardt
T-WIWI-102899	Modeling and Analyzing Consumer Behavior with R	4,5 CR	Dorner, Weinhardt
T-WIWI-108765	Practical Seminar: Advanced Analytics	4,5 CR	Weinhardt

Competence Certificate

The assessment is carried out as partial exams 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.

Competence Goal

Students of this module

- learn methods for planning empirical studies, in particular laboratory experiments,
- acquire theoretical knowledge and practical skills in analysing empirical data,
- familiarize with different ways of modelling user behaviour, are able to critically discuss, and to evaluate them

Prerequisites

None

Content

Understanding and supporting user interactions with applications better plays an increasingly large role in the design of business applications. This applies both to interfaces for customers and to internal information systems. The data that is generated during user interactions can be channelled straight into business processes, for instance by analysing and decomposing purchase decisions, and by feeding this data into product design processes.

The Crowd Analytics section considers the analysis of data from online platforms, particularly of those following crowd- or peer-to-peer based business models. This includes platforms like Airbnb, Kickstarter and Amazon Mechanical Turk.

Theoretical models of user (decision) behaviour help analyzing the empirically observed user behaviour in a systematic fashion. Testing these models and their predictions in controlled experiments (primarily in the lab) in turn helps refine theory and to generate practically relevant design recommendations. Analyses are carried out using advanced analytic methods.

Students learn fundamental theoretical models for user behaviour in systems and apply them to cases. Students are also taught methods and skills for conceptualizing and planning empirical studies and for analyzing the resulting data.

Recommendation

Basic knowledge of Information Management, Operations Research, Descriptive Statistics, and Inferential Statistics is assumed.

M

5.49 Module: Data Science: Evidence-based Marketing [M-WIWI-101647]

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
5

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-103139	Marketing Analytics	4,5 CR	Klarmann
T-WIWI-107720	Market Research	4,5 CR	Klarmann

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

- possess advanced knowledge of relevant market research contents
- know many different qualitative and quantitative methods for measuring customer behavior, preparation of strategic decisions, making causal deductions, usage of social media data and sales forecasting
- possess the statistical skills required for working in marketing research

Prerequisites

Keine.

Content

This module provides in-depth knowledge of relevant quantitative and qualitative methods used in market research. Students can attend the following courses:

- The course "Market Research" provides contents of practical relevance for measuring customer attitudes and customer behavior. The participants learn using statistical methods for strategic decision-making in marketing. Students who are interested in writing their master thesis at the Marketing & Sales Research Group are required to take this course.
- The course "Marketing Analytics" is based on "Market Research" and teaches advanced statistical methods for analyzing relevant marketing and market research questions. Please note that a successful completion of "Market Research" is a prerequisite for the completion of "Marketing Analytics".

Recommendation

None

Workload

The total workload for this module is approximately 270 hours.

M

5.50 Module: Datamanagement in the Cloud [M-INFO-100769]

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

Credits
5

Recurrence
Irregular

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101306	Datamanagement in the Cloud	5 CR	Böhm

M**5.51 Module: Decentralized Systems: Fundamentals, Modeling, and Applications [M-INFO-105334]**

Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Each summer term

Language
English

Level
4

Version
1

Mandatory			
T-INFO-110820	Decentralized Systems: Fundamentals, Modeling, and Applications	4 CR	Hartenstein

M**5.52 Module: Decision Procedures with Applications to Software Verification [M-INFO-104381]**

Responsible: Prof. Dr. Carsten Sinz
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each winter term

Language
German/English

Level
4

Version
1

Mandatory			
T-INFO-108955	Decision Procedures with Applications to Software Verification	5 CR	Sinz

M

5.53 Module: Deep Learning and Neural Networks [M-INFO-104460]

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
6

Recurrence
Each summer term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-109124	Deep Learning and Neural Networks	6 CR	Waibel

M

5.54 Module: Deep Learning for Computer Vision [M-INFO-104099]

Responsible: Prof. Dr.-Ing. Rainer Stiefelhagen

Organisation: KIT Department of Informatics

Part of: Informatics

Credits
3

Recurrence
Each summer term

Language
German/English

Level
4

Version
2

Mandatory			
T-INFO-109796	Deep Learning for Computer Vision	3 CR	Stiefelhagen

Competence Goal

Students should be able to grasp the underlying concepts in the field of deep learning and its various applications.

- Understand the theoretical basis of deep learning
- Understand the Convolutional Neural Networks (CNN)
- Develop basis for the concepts and algorithms used in building and training the CNNs.
- Able to apply deep learning in different computer vision applications.

Content

In recent years tremendous progress has been made in analysing and understanding image and video content. The dominant approach in Computer Vision today are deep learning approaches, in particular the usage of Convolutional Neural Networks.

The lecture introduces the basics, as well as advanced aspects of deep learning methods and their application for a number of computer vision tasks. The following topics will be addressed in the lecture:

- Introduction to Deep Learning
- Convolutional Neural Networks (CNN): Background
- CNNs: basic architectures and learning algorithms
- Object Recognition with CNN
- Image Segmentation with CNN
- Recurrent Neural Networks
- Generating image descriptions (Image Captioning)
- Automatic question answering (Visual Question Answering)
- Generative Adversarial Networks (GAN) and their applications
- Deep Learning platforms and tools

Annotation

The course is partially given in German and English.

M

5.55 Module: Deployment of Database Systems [M-INFO-100780]

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

Credits
5

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101317	Deployment of Database Systems	5 CR	Böhm

M

5.56 Module: Design and Architectures of Embedded Systems (ES2) [M-INFO-100831]

Responsible: Prof. Dr.-Ing. Jörg Henkel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101368	Design and Architectures of Embedded Systems (ES2)	3 CR	Henkel

M

5.57 Module: Design Principles for Interactive Real-Time Systems [M-INFO-100753]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101290	Design Principles for Interactive Real-Time Systems	3 CR	Beyerer

M

5.58 Module: Designing Interactive Information Systems [M-WIWI-104080]

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

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

Mandatory			
T-WIWI-110851	Designing Interactive Systems	4,5 CR	Gnewuch , Mädche
Election block: Supplementary Courses (at most 4,5 credits)			
T-WIWI-110877	Engineering Interactive Systems	4,5 CR	
T-WIWI-111109	KD ² Lab Hands-On Research Course: New Ways and Tools in Experimental Economics	4,5 CR	Weinhardt
T-WIWI-108437	Practical Seminar: Information Systems and Service Design	4,5 CR	Mädche

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.

Competence Goal

The student

- has a comprehensive understanding of conceptual and theoretical foundations of interactive systems
- knows design processes for interactive systems
- is aware of the most important techniques and tools for designing interactive systems and knows how to apply them to real-world problems
- is able to apply design principles for the design of most important classes of interactive systems,
- creates new solutions of interactive systems teams

Prerequisites

The course "Interactive Information Systems" is compulsory and must be examined.

Content

Advanced information and communication technologies make interactive systems ever-present in the users' private and business life. They are an integral part of smartphones, devices in the smart home, mobility vehicles as well as at the working place in production and administration (e.g. in the form of dashboards).

With the continuous growing capabilities of computers, the design of the interaction between human and computer becomes even more important. This module focuses on design processes and principles for interactive systems. The contents of the module abstract from the technical implementation details and focus on foundational concepts, theories, practices and methods for the design of interactive systems. The students get the necessary knowledge to guide the successful implementation of interactive systems in business and private life.

Each lecture in the module is accompanied with a capstone project that is carried out with an industry partner.

Annotation

See <http://issd.iism.kit.edu/305.php> for further information.

Workload

The total workload for this module is approximately 270 hours.

M

5.59 Module: Development of Business Information Systems [M-WIWI-101477]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: Informatics

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
5

Election block: Compulsory Elective Courses (between 1 and 2 items)			
T-WIWI-102661	Database Systems and XML	4,5 CR	Oberweis
T-WIWI-102895	Software Quality Management	4,5 CR	Oberweis
Election block: Supplementary Courses (at most 1 item)			
T-WIWI-110346	Supplement Enterprise Information Systems	4,5 CR	Oberweis
T-WIWI-102667	Management of IT-Projects	4,5 CR	Schätzle
T-WIWI-110548	Advanced Lab Informatics (Master)	4,5 CR	Professorenschaft des Fachbereichs Informatik
T-WIWI-102669	Strategic Management of Information Technology	4,5 CR	Wolf

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

- describe the structure and the components of enterprise information systems,
- explain functionality and architecture of the enterprise information system components ,
- choose and apply relevant components to solve given problems in a methodic approach,
- describe roles, activities and products in the field of software engineering management,
- compare process and quality models and choose an appropriate model in a concrete situation,
- write scientific theses in the areas of enterprise information system components and software engineering management and find own solutions for given problems and research questions.

Prerequisites

The course *Datenbanksysteme und XML* or the course *Software Quality Management* must be examined.

Content

An enterprise information system contains the complete application software to store and process data and information in an organisation including design and management of databases, workflow management and strategic information planning.

Due to global networking and geographical distribution of enterprises as well as the increasing acceptance of eCommerce the application of distributed information systems becomes particular important.

This module teaches concepts and methods for design and application of information systems.

Annotation

The course T-WIWI-102759 "Requirements Analysis and Requirements Management" will no longer be offered in the module as of winter semester 2018/2019.

Workload

See German version

M

5.60 Module: Digital Service Systems in Industry [M-WIWI-102808]

Responsible: Prof. Dr. Wolf Fichtner
Prof. Dr. Stefan Nickel

Organisation: KIT Department of Economics and Management

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

Credits
9Recurrence
Each termLanguage
GermanLevel
4Version
6

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-102872	Challenges in Supply Chain Management	4,5 CR	Mohr
T-WIWI-110280	Digital Services: Business Models and Transformation	4,5 CR	Satzger
T-WIWI-107043	Liberalised Power Markets	3 CR	Fichtner
T-WIWI-106200	Modeling and OR-Software: Advanced Topics	4,5 CR	Nickel
T-WIWI-106563	Practical Seminar Digital Service Systems	4,5 CR	Satzger

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 the basics of the management of digital services applied on an industrial context
- gain an industry-specific insight into the importance and most relevant characteristics of information systems as key components of the digitalization of business processes, products and services
- are able to transfer and apply the models and methods introduced on practical scenarios and simulations.
- understand the control and optimization methods in the sector of service management and are able to apply them properly.

Prerequisites

This module can only be assigned as an elective module.

Content

This module aims at deepening the fundamental knowledge of digital service management in the industrial context. Various mechanisms and methods to shape and control connected digital service systems in different industries are discussed and demonstrated with real life application cases.

Recommendation

None

Annotation

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

Workload

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

M

5.61 Module: Distributed Computing [M-INFO-100761]

Responsible: Prof. Dr. Achim Streit
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101298	Distributed Computing	4 CR	Streit

M

5.62 Module: Econometrics and Statistics I [M-WIWI-101638]

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
4

Mandatory			
T-WIWI-103125	Applied Econometrics	4,5 CR	Schienle
Election block: Supplementary Courses (between 4,5 and 5 credits)			
T-WIWI-103066	Data Mining and Applications	4,5 CR	Nakhaeizadeh
T-WIWI-103064	Financial Econometrics	4,5 CR	Schienle
T-WIWI-103126	Non- and Semiparametrics	4,5 CR	Schienle
T-WIWI-103127	Panel Data	4,5 CR	Heller
T-WIWI-110868	Predictive Modeling	4,5 CR	Krüger
T-WIWI-103065	Statistical Modeling of Generalized Regression Models	4,5 CR	Heller
T-WIWI-110939	Financial Econometrics II	4,5 CR	Schienle

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 in depth understanding of advanced Econometric techniques suitable for different types of data. He/She is able to apply his/her theoretical knowledge to real world problems with the help of statistical software and to evaluate performance of different approaches based on statistical criteria.

Prerequisites

The course "Advanced Statistics" [2520020] is compulsory and must be examined.

Content

The courses of this module offer students a broad range of advanced Econometric techniques for state-of-the art data analysis.

Workload

The total workload for this module is approximately 270 hours.

M

5.63 Module: Econometrics and Statistics II [M-WIWI-101639]

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
3

Election block: Compulsory Elective Courses (between 9 and 10 credits)			
T-WIWI-103066	Data Mining and Applications	4,5 CR	Nakhaeizadeh
T-WIWI-103064	Financial Econometrics	4,5 CR	Schienle
T-WIWI-103124	Multivariate Statistical Methods	4,5 CR	Grothe
T-WIWI-103126	Non- and Semiparametrics	4,5 CR	Schienle
T-WIWI-103127	Panel Data	4,5 CR	Heller
T-WIWI-103128	Portfolio and Asset Liability Management	4,5 CR	Safarian
T-WIWI-110868	Predictive Modeling	4,5 CR	Krüger
T-WIWI-103065	Statistical Modeling of Generalized Regression Models	4,5 CR	Heller
T-WIWI-103129	Stochastic Calculus and Finance	4,5 CR	Safarian
T-WIWI-110939	Financial Econometrics II	4,5 CR	Schienle

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 in depth understanding of advanced Econometric techniques suitable for different types of data. He/She is able to apply his/her theoretical knowledge to real world problems with the help of statistical software and to evaluate performance of different approaches based on statistical criteria.

Prerequisites

This module can only be passed if the module "*Econometrics and Statistics I*" has been finished successfully before.

Content

This module builds on prerequisites acquired in Module "*Econometrics and Statistics I*". The courses of this module offer students a broad range of advanced Econometric techniques for state-of-the art data analysis.

Workload

The total workload for this module is approximately 270 hours.

M

5.64 Module: Economic Theory and its Application in Finance [M-WIWI-101502]

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

Credits
9

Recurrence
Each term

Language
German/English

Level
4

Version
4

Election block: Compulsory Elective Courses (1 item)			
T-WIWI-102609	Advanced Topics in Economic Theory	4,5 CR	Mitusch
T-WIWI-102861	Advanced Game Theory	4,5 CR	Ehrhart, Puppe, Reiß
Election block: Supplementary Courses (1 item)			
T-WIWI-102647	Asset Pricing	4,5 CR	Ruckes, Uhrig-Homburg
T-WIWI-102622	Corporate Financial Policy	4,5 CR	Ruckes
T-WIWI-109050	Corporate Risk Management	4,5 CR	Ruckes
T-WIWI-102623	Financial Intermediation	4,5 CR	Ruckes

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 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

The students

- have learnt the methods of formal economic modeling, particularly of General Equilibrium Theory and contract theory
- will be able to apply these methods to the topics in Finance, specifically the areas of financial markets and institutions and corporate finance
- have gained many useful insights into the relationship between firms and investors and the functioning of financial markets

Prerequisites

One of the courses T-WIWI-102861 "Advanced Game Theory" and T-WIWI-102609 "Advanced Topics in Economic Theory" is compulsory.

Content

The mandatory course "Advanced Topics in Economic Theory" is devoted in equal parts to General Equilibrium Theory and to contract theory. The course "Asset Pricing" will apply techniques of General Equilibrium Theory to valuation of financial assets. The courses "Corporate Financial Policy" and "Finanzintermediation" will apply the techniques of contract theory to issues of corporate finance and financial institutions.

Workload

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

M

5.65 Module: eEnergy: Markets, Services and Systems [M-WIWI-103720]

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
1

Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-107501	Energy Market Engineering	4,5 CR	Weinhardt
T-WIWI-107503	Energy Networks and Regulation	4,5 CR	Weinhardt
T-WIWI-107504	Smart Grid Applications	4,5 CR	Weinhardt

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of 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 aware of design options for energy and especially electricity markets and can derive implications for the market results from the market design,
- knows about current trends regarding the Smart Grid and understands affiliated modelling approaches,
- can evaluate business models of electricity grids according to the regulation regime
- is prepared for scientific contributions in the field of energy system analysis.

Prerequisites

None.

Content

The module conveys scientific and practical knowledge to analyse energy markets and according business models. To do so the scientific discussion on energy market designs is evaluated and analysed. Different energy market models are presented and their design implications are evaluated. Furthermore, the electricity system is analysed with regards to being a network industry and resulting regulation and business models are discussed. Besides these traditional areas of energy economics we will look at methods and models of digitalisation in the energy sector.

Annotation

The lecture Smart Grid Applications will be available starting in the winter term 2018/19.

Workload

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

M

5.66 Module: Electronic Markets [M-WIWI-101409]

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
5

Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-108880	Blockchains & Cryptofinance	4,5 CR	Schuster, Uhrig-Homburg
T-WIWI-102762	Business Dynamics	4,5 CR	Geyer-Schulz
T-WIWI-102886	Business Administration in Information Engineering and Management	5 CR	Geyer-Schulz
T-WIWI-102640	Market Engineering: Information in Institutions	4,5 CR	Weinhardt
T-WIWI-105946	Price Management	4,5 CR	Geyer-Schulz, Glenn
T-WIWI-102713	Telecommunication and Internet Economics	4,5 CR	Mitusch

Competence Certificate

Please note that the course "Business Administration in Information Engineering and Management" is no longer offered and that the examination is only offered in exceptional cases (see description of T-WIWI-102886).

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

Prerequisites

None

Content

What are the conditions that make electronic markets develop and how can one analyse and optimize such markets?

In this module, the selection of the type of organization as an optimization of transaction costs is treated. Afterwards, the efficiency of electronic markets (price, information and allocation efficiency) as well as reasons for market failure are described. Finally, motivational issues like bounded rationality and information asymmetries (private information and moral hazard), as well as the development of incentive schemes, are presented. Regarding the market design, especially the interdependencies of market organization, market mechanisms, institutions and products are described and theoretical foundations are lectured.

Electronic markets are dynamic systems that are characterized by feedback loops between many different variables. By means of the tools of business dynamics such markets can be modelled. Simulations of complex systems allow the analysis and optimization of markets, business processes, policies, and organizations.

Topics include:

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

Recommendation

None

Annotation

The course Price Management is offered for the first time in summer term 2016.

Workload

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

M

5.67 Module: Embedded Systems for Multimedia and Image Processing [M-INFO-100759]

Responsible: Prof. Dr.-Ing. Jörg Henkel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Duration
1 term

Language
English

Level
4

Version
1

Mandatory			
T-INFO-101296	Embedded Systems for Multimedia and Image Processing	3 CR	Henkel

M

5.68 Module: Empirical Software Engineering [M-INFO-100798]

Responsible: Prof. Dr. Walter Tichy
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101335	Empirical Software Engineering	4 CR	Tichy

M

5.69 Module: Energy Economics and Energy Markets [M-WIWI-101451]

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

Credits
9

Recurrence
Each term

Duration
1 semester

Language
German/English

Level
4

Version
7

Mandatory			
T-WIWI-107043	Liberalised Power Markets	3 CR	Fichtner
Election block: Supplementary Courses (at least 6 credits)			
T-WIWI-102691	Energy Trade and Risk Management	3 CR	N.N.
T-WIWI-107501	Energy Market Engineering	4,5 CR	Weinhardt
T-WIWI-108016	Simulation Game in Energy Economics	3 CR	Genoese
T-WIWI-107446	Quantitative Methods in Energy Economics	3 CR	Plötz
T-WIWI-102712	Regulation Theory and Practice	4,5 CR	Mitusch

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 take place 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

- gains detailed knowledge about the new requirements of liberalised energy markets,
- describes the planning tasks on the different energy markets,
- knows solution approaches to respective planning tasks.

Prerequisites

The lecture Liberalised Power Markets has to be examined.

Content

Liberalised Power Markets: The European liberalisation process, energy markets, pricing, market failure, investment incentives, market power

Energy Trade and Risk Management: trade centres, trade products, market mechanisms, position and risk management

Simulation Game in Energy Economics: Simulation of the German electricity system

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.

Workload

The total workload for this module is approximately 270 hours.

M

5.70 Module: Energy Economics and Technology [M-WIWI-101452]

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

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

Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-102793	Efficient Energy Systems and Electric Mobility	3,5 CR	Jochem
T-WIWI-102650	Energy and Environment	4,5 CR	Karl
T-WIWI-102830	Energy Systems Analysis	3 CR	Ardone, Fichtner
T-WIWI-107464	Smart Energy Infrastructure	3 CR	Ardone, Pustisek
T-WIWI-102695	Heat Economy	3 CR	Fichtner

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 take place 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

- gains detailed knowledge about present and future energy supply technologies (focus on final energy carriers electricity and heat),
- knows the techno-economic characteristics of plants for energy provision, for energy transport as well as for energy distribution and demand,
- is able to assess the environmental impact of these technologies.

Prerequisites

None

Content

Heat Economy: district heating, heating technologies, reduction of heat demand, statutory provisions

Energy Systems Analysis: Interdependencies in energy economics, energy systems modelling approaches in energy economics

Energy and Environment: emission factors, emission reduction measures, environmental impact

Efficient Energy Systems and Electric Mobility: concepts and current trends in energy efficiency, Overview of and economical, ecological and social impacts through electric mobility

Workload

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

M**5.71 Module: Energy Informatics 1 [M-INFO-101885]**

Responsible: Prof. Dr. Veit Hagenmeyer
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each winter term

Language
German/English

Level
4

Version
2

Mandatory			
T-INFO-103582	Energy Informatics 1	5 CR	Hagenmeyer
T-INFO-110356	Energy Informatics 1 - preliminary work	0 CR	Hagenmeyer

M

5.72 Module: Energy Informatics 2 [M-INFO-103044]

Responsible: Prof. Dr. Veit Hagenmeyer
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each summer term

Language
German/English

Level
4

Version
3

Mandatory			
T-INFO-106059	Energy Informatics 2	5 CR	Hagenmeyer

M

5.73 Module: Energy System Modelling [M-INFO-104117]

Responsible: Dr. Thomas William Brown
Organisation: KIT Department of Informatics
Part of: Informatics

Credits
4

Recurrence
Each summer term

Language
English

Level
4

Version
2

Mandatory			
T-INFO-108532	Energy System Modelling	4 CR	Brown

Competence Goal

Students are in the position to:

- describe and explain the challenges when integrating renewable energy in energy systems
- critically evaluate different concepts for the integration of renewable energy (networks versus storage)
- understand the challenges when modelling large-scale energy systems, as well as complexity reduction techniques
- do model calculations for energy system analysis
- describe the basics of electricity market theory and operation

program energy system models using standard open source tools

Content

This module will cover the modelling and analysis of future energy systems, with a focus on renewable energies and their interactions with energy networks.

Topics include:

- Time series analysis of wind, solar and energy demand in Europe.
- Complex network theory.
- Analysis of power flow in electrical networks.
- Modelling storage, the role of storage versus networks.
- Basics of optimisation, Karush-Kuhn-Tucker conditions.
- Basics of microeconomics.
- Economics of electricity markets.
- Short-run versus long-run efficiency.
- Network optimisation, storage optimisation.
- Programming energy system models.
- Model reduction techniques.
- Coupling electricity to other energy sectors.
- Role of renewables in electricity markets.

Additional topics may also include:

- Dynamics in power networks.
- Contingency analysis.

Effects of climate change on energy systems.

Recommendation

Basic knowledge of mathematics, linear algebra, differential equations, statistics and programming is assumed.

If you are not familiar with Python, it is recommended to take an online tutorial in Python before the course starts, since the exercise classes involve Python programming.

Basic knowledge of network theory and optimisation theory are helpful, but not required.

M

5.74 Module: Entrepreneurship (EnTechnon) [M-WIWI-101488]

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

Credits
9

Recurrence
Each term

Duration
2 semester

Language
German/English

Level
4

Version
8

Election notes

The courses "Business Planning for Founders - EUCOR" and the course "International Selling - EUCOR" must be taken together.

Election block: Mandatory part (1 item)			
T-WIWI-102864	Entrepreneurship	3 CR	Terzidis
Election block: Compulsory Elective Courses (1 item)			
T-WIWI-102865	Business Planning	3 CR	Terzidis
T-WIWI-110389	Business Planning for Founders - EUCOR	3 CR	Terzidis
T-WIWI-102866	Design Thinking	3 CR	Terzidis
T-WIWI-102833	Entrepreneurial Leadership & Innovation Management	3 CR	Terzidis
T-WIWI-102894	Entrepreneurship Research	3 CR	Terzidis
T-WIWI-110381	International Selling – EUCOR	3 CR	Casenave , Klarmann
T-WIWI-110985	International Business Development and Sales	6 CR	Casenave , Klarmann, Terzidis
Election block: Supplementary Courses (1 item)			
T-WIWI-102866	Design Thinking	3 CR	Terzidis
T-WIWI-102851	Developing Business Models for the Semantic Web	3 CR	Sure-Vetter
T-WIWI-102833	Entrepreneurial Leadership & Innovation Management	3 CR	Terzidis
T-WIWI-102894	Entrepreneurship Research	3 CR	Terzidis
T-WIWI-102852	Case Studies Seminar: Innovation Management	3 CR	Weissenberger-Eibl
T-WIWI-102639	Business Models in the Internet: Planning and Implementation	4,5 CR	Weinhardt
T-WIWI-102865	Business Planning	3 CR	Terzidis
T-WIWI-110389	Business Planning for Founders - EUCOR	3 CR	Terzidis
T-WIWI-110374	Firm creation in IT security	3 CR	Terzidis
T-WIWI-102893	Innovation Management: Concepts, Strategies and Methods	3 CR	Weissenberger-Eibl
T-WIWI-110381	International Selling – EUCOR	3 CR	Casenave , Klarmann
T-WIWI-109064	Joint Entrepreneurship Summer School	6 CR	Terzidis
T-WIWI-102612	Managing New Technologies	3 CR	Reiß
T-WIWI-102853	Roadmapping	3 CR	Koch
T-WIWI-110985	International Business Development and Sales	6 CR	Casenave , Klarmann, Terzidis

Competence Certificate

See German version.

Competence Goal

See German version.

Prerequisites

None

Recommendation

None

Workload

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

M

5.75 Module: Environmental Economics [M-WIWI-101468]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Economics)

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

Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-102650	Energy and Environment	4,5 CR	Karl
T-WIWI-100007	Transport Economics	4,5 CR	Mitusch, Szimba
T-WIWI-102615	Environmental Economics and Sustainability	5 CR	Walz
T-WIWI-102616	Environmental and Resource Policy	4 CR	Walz
T-INFO-101348	Environmental Law	3 CR	Eichenhofer

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 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

The students

- understand the treatment of non-market resources as well as future resource shortages
- are able to model markets of energy and environmental goods
- are able to assess the results of government intervention
- know legal basics and are able to evaluate conflicts with regard to legal situation

Prerequisites

None

Content

Environmental degradation and increasing resource use are global challenges, which have to be tackled on a worldwide level. The module addresses these challenges from the perspective of economics, and imparts the fundamental knowledge of environmental and sustainability economics, and environmental and resource policy to the students. Additional courses address environmental law, environmental pressure, and applications to the transport sector.

Recommendation

Knowledge in the area of microeconomics and of the content of the course *Economics I: Microeconomics* [2600012], respectively, is required.

Workload

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

M

5.76 Module: European and National Technology Law [M-INFO-104810]

Responsible: Dr. Yvonne Matz
Organisation: KIT Department of Informatics
Part of: [Law](#)

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-109824	European and National Technology Law	9 CR	Matz

M

5.77 Module: Experimental Economics [M-WIWI-101505]

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
5

Election block: Compulsory Elective Courses (2 items)			
T-WIWI-102614	Experimental Economics	4,5 CR	Weinhardt
T-WIWI-105781	Incentives in Organizations	4,5 CR	Nieken
T-WIWI-102862	Predictive Mechanism and Market Design	4,5 CR	Reiß
T-WIWI-102863	Topics in Experimental Economics	4,5 CR	Reiß

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

Students

- are acquainted with the methods of Experimental Economics along with its strengths and weaknesses;
- understand how theory-guided research in Experimental Economics interacts with the development of theory;
- are provided with foundations in data analysis;
- design an economic experiment and analyze its outcome.

Prerequisites

None.

Content

The module Experimental Economics offers an introduction into the methods and topics of Experimental Economics. It also fosters and extends knowledge in theory-guided experimental economics and its interaction with theory development. Throughout the module, readings of selected papers are required.

Recommendation

Basic knowledge in mathematics, statistics, and game theory is assumed.

Annotation

The course "Predictive Mechanism and Market Design" is offered every second winter semester, e.g. WS2013 / 14, WS2015 / 16, ...

Workload

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

M**5.78 Module: Finance 1 [M-WIWI-101482]**

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
9Recurrence
Each termDuration
1 semesterLanguage
German/EnglishLevel
4Version
1

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-102643	Derivatives	4,5 CR	Uhrig-Homburg
T-WIWI-102621	Valuation	4,5 CR	Ruckes
T-WIWI-102647	Asset Pricing	4,5 CR	Ruckes, Uhrig-Homburg

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

The student

- has core skills in economics and methodology in the field of finance
- assesses corporate investment projects from a financial perspective
- is able to make appropriate investment decisions on financial markets

Prerequisites

None

Content

The courses of this module equip the students with core skills in economics and methodology in the field of modern finance. Securities which are traded on financial and derivative markets are presented, and frequently applied trading strategies are discussed. A further focus of this module is on the assessment of both profits and risks in security portfolios and corporate investment projects from a financial perspective.

Workload

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

M

5.79 Module: Finance 2 [M-WIWI-101483]

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
9Recurrence
Each termDuration
1 semesterLanguage
German/EnglishLevel
4Version
6

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-110513	Advanced Empirical Asset Pricing	4,5 CR	Thimme
T-WIWI-102647	Asset Pricing	4,5 CR	Ruckes, Uhrig-Homburg
T-WIWI-108880	Blockchains & Cryptofinance	4,5 CR	Schuster, Uhrig-Homburg
T-WIWI-110995	Bond Markets	4,5 CR	Uhrig-Homburg
T-WIWI-110997	Bond Markets - Models & Derivatives	3 CR	Uhrig-Homburg
T-WIWI-110996	Bond Markets - Tools & Applications	1,5 CR	Uhrig-Homburg
T-WIWI-102622	Corporate Financial Policy	4,5 CR	Ruckes
T-WIWI-109050	Corporate Risk Management	4,5 CR	Ruckes
T-WIWI-102643	Derivatives	4,5 CR	Uhrig-Homburg
T-WIWI-110797	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-102644	Fixed Income Securities	4,5 CR	Uhrig-Homburg
T-WIWI-102900	Financial Analysis	4,5 CR	Luedecke
T-WIWI-102623	Financial Intermediation	4,5 CR	Ruckes
T-WIWI-102626	Business Strategies of Banks	3 CR	Müller
T-WIWI-102646	International Finance	3 CR	Uhrig-Homburg
T-WIWI-102645	Credit Risk	4,5 CR	Uhrig-Homburg
T-WIWI-110511	Strategic Finance and Technology Change	1,5 CR	Ruckes
T-WIWI-102621	Valuation	4,5 CR	Ruckes
T-WIWI-110933	Web App Programming for Finance	4,5 CR	Thimme

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

The student is in a position to discuss, analyze and provide answers to advanced economic and methodological issues in the field of modern finance.

Prerequisites

It is only possible to choose this module in combination with the module *Finance 1*. The module is passed only after the final partial exam of *Finance 1* is additionally passed.

Content

The module Finance 2 is based on the module Finance 1. The courses of this module equip the students with advanced skills in economics and methodology in the field of modern finance on a broad basis.

Annotation

The courses *eFinance: Information Engineering and Management for Securities Trading* [2540454] and *Financial Analysis* [2530205] can be chosen from summer term 2015 on.

Workload

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

M

5.80 Module: Finance 3 [M-WIWI-101480]

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
9Recurrence
Each termDuration
1 semesterLanguage
German/EnglishLevel
4Version
6

Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-110513	Advanced Empirical Asset Pricing	4,5 CR	Thimme
T-WIWI-102647	Asset Pricing	4,5 CR	Ruckes, Uhrig-Homburg
T-WIWI-108880	Blockchains & Cryptofinance	4,5 CR	Schuster, Uhrig-Homburg
T-WIWI-110995	Bond Markets	4,5 CR	Uhrig-Homburg
T-WIWI-110997	Bond Markets - Models & Derivatives	3 CR	Uhrig-Homburg
T-WIWI-110996	Bond Markets - Tools & Applications	1,5 CR	Uhrig-Homburg
T-WIWI-102622	Corporate Financial Policy	4,5 CR	Ruckes
T-WIWI-109050	Corporate Risk Management	4,5 CR	Ruckes
T-WIWI-102643	Derivatives	4,5 CR	Uhrig-Homburg
T-WIWI-110797	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-102644	Fixed Income Securities	4,5 CR	Uhrig-Homburg
T-WIWI-102900	Financial Analysis	4,5 CR	Luedecke
T-WIWI-102623	Financial Intermediation	4,5 CR	Ruckes
T-WIWI-102626	Business Strategies of Banks	3 CR	Müller
T-WIWI-102646	International Finance	3 CR	Uhrig-Homburg
T-WIWI-102645	Credit Risk	4,5 CR	Uhrig-Homburg
T-WIWI-110511	Strategic Finance and Technology Change	1,5 CR	Ruckes
T-WIWI-102621	Valuation	4,5 CR	Ruckes
T-WIWI-110933	Web App Programming for Finance	4,5 CR	Thimme

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

The student is in a position to discuss, analyze and provide answers to advanced economic and methodological issues in the field of modern finance.

Prerequisites

It is only possible to choose this module in combination with the module *Finance 1* and *Finance 2*. The module is passed only after the final partial exams of *Finance 1* and *Finance 2* are additionally passed.

Content

The courses of this module equip the students with advanced skills in economics and methodology in the field of modern finance on a broad basis.

Workload

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

M**5.81 Module: FinTech Innovations [M-WIWI-105036]**

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

Credits
9

Recurrence
Each term

Language
English

Level
4

Version
1

Mandatory			
T-WIWI-106193	Engineering FinTech Solutions	9 CR	Ulrich

Competence Certificate

The assessment is carried out in form of a written thesis based on the course "Engineering FinTech Solutions".

Competence Goal

Students will learn to connect innovative financial research with modern information technology to build a prototype that solves some daunting tasks for professional end-users in the field of modern asset and risk management. Students with correspondingly good technological knowledge and a corresponding affinity for IT applications independently create their own prototypes in order to solve an extensive FinTech problem. Students learn to organize themselves in a team in a goal-oriented manner and to bring a comprehensive software project from the field of financial technology to success in partial steps. In addition, students deepen their financial and IT skills and are therefore able to successfully complete this interface, which is important for the booming FinTech market. Students of this module are particularly well prepared for management tasks in various innovation projects (not only in the area of FinTech).

Prerequisites

see T-WIWI-106193 "Engineering FinTech Solutions"

Content

The module is targeted to students with strong knowledge in the field of computational risk and asset management and strong programming skills. It offers students the opportunity to develop an algorithmic solution and hence ample their programming experience and their understanding of financial economics or asset and risk management.

Recommendation

None

Workload

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

M

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

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
6

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101336	Formal Systems	6 CR	Beckert

M

5.83 Module: Formal Systems II: Application [M-INFO-100744]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101281	Formal Systems II: Application	5 CR	Beckert

M

5.84 Module: Formal Systems II: Theory [M-INFO-100841]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101378	Formal Systems II: Theory	5 CR	Beckert

M

5.85 Module: Fuzzy Sets [M-INFO-100839]

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

Credits
6

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101376	Fuzzy Sets	6 CR	Hanebeck

M

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

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Irregular

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101267	Geometric Optimzation	3 CR	Prautzsch

M

5.87 Module: Governance, Risk & Compliance [M-INFO-101242]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: Law

Credits
9

Recurrence
Each term

Duration
2 semester

Language
German

Level
4

Version
6

Mandatory			
T-INFO-101288	Corporate Compliance	3 CR	Herzig
Election block: Governance, Risk & Compliance (at least 1 item as well as at least 6 credits)			
T-INFO-101316	Law of Contracts	3 CR	Hoff
T-INFO-108405	Data Protection by Design	3 CR	Raabe
T-INFO-102047	Seminar: Governance, Risk & Compliance	3 CR	Dreier
T-INFO-109910	IT- Security Law	3 CR	Raabe
T-INFO-101307	Internet Law	3 CR	Dreier

M**5.88 Module: Graph Partitioning and Graph Clustering in Theory and Practice [M-INFO-100758]**

Responsible: Prof. Dr. Peter Sanders
Dr. rer. nat. Torsten Ueckerdt

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
5

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
2

Mandatory			
T-INFO-101295	Graph Partitioning and Graph Clustering in Theory and Practice	4 CR	Sanders, Ueckerdt
T-INFO-110999	Graph Partitioning and Graph Clustering in Theory and Practice - Practical	1 CR	Lückert, Sanders

M

5.89 Module: Growth and Agglomeration [M-WIWI-101496]

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

Credits
9

Recurrence
Each term

Duration
1 semester

Language
German/English

Level
4

Version
3

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-109194	Dynamic Macroeconomics	4,5 CR	Brumm
T-WIWI-102785	Theory of Endogenous Growth	4,5 CR	Ott
T-WIWI-103107	Spatial Economics	4,5 CR	Ott

Competence Certificate

The assessment is carried out as partial written exams (see the lectures descriptions).

The overall grade for the module is the average of the grades for each course weighted by the credits.

Competence Goal

The student

- gains deepened knowledge of micro-based general equilibrium models
- understands how based on individual optimizing decisions aggregate phenomena like economic growth or agglomeration (cities / metropolises) result
- is able to understand and evaluate the contribution of these phenomena to the development of economic trends
- can derive policy recommendations based on theory

Prerequisites

None

Content

The module includes the contents of the lectures *Endogenous Growth Theory* [2561503], *Spatial Economics* [2561260] and *International Economic Policy* [2560254]. While the first two lectures have a more formal-analytic focus, the third lecture approaches fundamental ideas and problems from the field of international economic policy from a more verbal perspective.

The common underlying principle of all three lectures in this module is that, based on different theoretical models, economic policy recommendations are derived.

Recommendation

Attendance of the course *Introduction Economic Policy* [2560280] is recommended.

Successful completion of the courses *Economics I: Microeconomics* and *Economics II: Macroeconomics* is required.

Workload

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

M

5.90 Module: Hands-on Bioinformatics Practical [M-INFO-101573]

Responsible: Prof. Dr. Alexandros Stamatakis

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
3

Recurrence
Irregular

Language
German

Level
4

Version
1

Mandatory			
T-INFO-103009	Hands-on Bioinformatics Practical	3 CR	Stamatakis

M

5.91 Module: Heterogeneous Parallel Computing Systems [M-INFO-100822]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101359	Heterogeneous Parallel Computing Systems	3 CR	Karl

M**5.92 Module: Human Brain and Central Nervous System: Anatomy, Information Transfer, Signal Processing, Neurophysiology and Therapy [M-INFO-100725]****Responsible:** Prof. Dr.-Ing. Rüdiger Dillmann**Organisation:** KIT Department of Informatics**Part of:** [Informatics](#)**Credits**
3**Recurrence**
Each term**Duration**
1 term**Language**
German**Level**
4**Version**
1

Mandatory			
T-INFO-101262	Human Brain and Central Nervous System: Anatomy, Information Transfer, Signal Processing, Neurophysiology and Therapy	3 CR	Dillmann, Spetzger

M

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

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

Credits
6

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

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

M

5.94 Module: Human Factors in Security and Privacy [M-WIWI-104520]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: [Informatics](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German	4	2

Mandatory			
T-WIWI-109270	Human Factors in Security and Privacy	4,5 CR	Volkamer
T-WIWI-108439	Advanced Lab Security, Usability and Society	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

Students ...

- know why many existing security and privacy mechanisms are not usable and why many awareness/education/training approaches are not effective
- can explain for concrete examples why these are not usable / not effective including why people are likely to face problems with these
- can explain what mental models are, why they are important and how they can be identified
- know how to conduct a cognitive walkthrough to identify problems with existing mechanisms and approaches
- know how to conduct semi-structured interviews
- know how user studies in the security context differ from those conducted in other contexts
- can explain the process of human centered security / privacy by design
- know the advantages and disadvantages of various graphical password schemes
- know concepts such as just in time and place security interventions

Prerequisites

None

Content

The history of information security and privacy has taught us that it takes more than technological innovation to develop effective security and privacy mechanisms: Many aspects of information security and privacy actually depend on both technical and human factors. As a result of focusing on the technical factors, we are seeing a persistent gap between theoretical security and actual security in real world which becomes an increasing problem in the age of digitalization. The gap is mainly caused by strong and actually unrealistic assumptions regarding the users' knowledge and behavior.

Human factors in security and privacy research addresses several types of security and privacy mechanisms, e.g., authentication mechanisms including text and graphical passwords, security and privacy indicators (such as the icons in the address bar of nowadays web browsers) and security and privacy interventions like warning messages, permission dialogs and security and privacy policies as well as corresponding configuration interfaces. Besides security and privacy mechanisms, human factors in security and privacy researchers deal with security and privacy awareness, education, and training approaches.

'Human factors in security & privacy' research areas are:

- identifying users' mental models using techniques such as (semi-)structured interviews or focus groups,
- evaluating existing approaches regarding their effectiveness in supporting their users in making secure decisions / informed decisions in the context of privacy using techniques such as cognitive walkthroughs, lab user studies or even field studies,
- proposing improved / new approaches and evaluating their effectiveness using the so called human-centered security / privacy by design approach.

This module discusses the various problems of existing security and privacy mechanisms and security and privacy awareness/education/training approaches. The lecture addresses relevant psychological and sociological aspects which are important to know and to consider when developing more usable security/privacy mechanisms and more effective awareness/education/training approaches. The human centered security and privacy by design approach is introduced. Furthermore, some of the methodologies used in this area are explained and a subset of them is applied. Finally, positive examples, such as graphical passwords, are introduced and discussed. Note, the main part of the exercise is replicating an interview based study. The main focus of the lab will be to replicate a quantitative based user study.

Annotation

This new module can be chosen from winter term 2018/2019.

Workload

The total workload for this module is approximately 270 hours.

M**5.95 Module: Human-Machine-Interaction in Anthropomatics: Basics [M-INFO-100824]**

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Dr. Jürgen Geisler

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
3

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101361	Human-Machine-Interaction in Anthropomatics: Basics	3 CR	Beyerer, Geisler

M

5.96 Module: Humanoid Robots - Practical Course [M-INFO-102560]

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

Credits
3

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-105142	Humanoid Robots - Practical Course	3 CR	Asfour

Competence Goal

The participant understands and knows how to address and structure a complex task in the context of humanoid robotics. The student is able to solve a complex programming task in a small team.

Content

In this block course, a complex task will be implemented in a small team. The tasks address algorithmic questions in the context of humanoid robotics, such as semantic scene understanding, active perception, grasping and manipulation planning, action representation with movement primitives, programming by demonstration and imitation learning.

Workload

- Introductory event: 2h
- Practical work: 80h
- Preparation and presentation of the conducted work: 8h

Total: 90h

M

5.97 Module: Image Data Compression [M-INFO-100755]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each winter term

Duration
1 term

Language
English

Level
4

Version
1

Mandatory			
T-INFO-101292	Image Data Compression	3 CR	Beyerer, Pak

M

5.98 Module: Industrial Production II [M-WIWI-101471]

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

Credits	Recurrence	Duration	Language	Level	Version
9	Each winter term	1 semester	German/English	4	2

Mandatory			
T-WIWI-102631	Planning and Management of Industrial Plants	5,5 CR	Schultmann
Election block: Supplementary Courses (at most 1 item)			
T-WIWI-102763	Supply Chain Management with Advanced Planning Systems	3,5 CR	Bosch, Göbelt
T-WIWI-102826	Risk Management in Industrial Supply Networks	3,5 CR	Schultmann, Wiens
T-WIWI-102828	Supply Chain Management in the Automotive Industry	3,5 CR	Heupel, Lang
T-WIWI-103134	Project Management	3,5 CR	Schultmann
Election block: Supplementary Courses (at most 1 item)			
T-WIWI-102634	Emissions into the Environment	3,5 CR	Karl
T-WIWI-102882	International Management in Engineering and Production	3,5 CR	Sasse
T-WIWI-110512	Life Cycle Assessment	3,5 CR	Schultmann

Competence Certificate

The assessment is carried out as partial exams (according to section 4 (2), 1 SPO) of the core course *Planning and Managing of Industrial Plants* [2581952] 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 able to describe the tasks of tactical production management with special attention drawn upon industrial plants.
- Students shall understand the relevant tasks in plant management (projection, realisation and supervising tools for industrial plants).
- Students shall be able to describe the special need of a techno-economic approach to solve problems in the field of tactical production management.
- Students shall be proficient in using selected techno-economic methods like investment and cost estimates, plant layout, capacity planning, evaluation principles of production techniques, production systems as well as methods to design and optimize production systems.
- Students shall be able to evaluate techno-economical approaches in planning tactical production management with respect to their efficiency, accuracy and relevance for industrial use.

Prerequisites

The course *Planning and Managing of Industrial Plants* [2581952] and at least one additional activity are compulsory and must be examined.

Content

- Planning and Management of Industrial Plants: Basics, circulation flow starting from projecting to techno-economic evaluation, construction and operating up to plant dismantling.

Annotation

Apart from the core course the courses offered are recommendations and can be replaced by courses from the Module Industrial Production III.

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

5.99 Module: Industrial Production III [M-WIWI-101412]

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

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

Mandatory			
T-WIWI-102632	Production and Logistics Management	5,5 CR	Glöser-Chahoud, Schultmann
Election block: Supplementary Courses from Module Industrial Production II (at most 1 item)			
T-WIWI-102634	Emissions into the Environment	3,5 CR	Karl
T-WIWI-102882	International Management in Engineering and Production	3,5 CR	Sasse
T-WIWI-110512	Life Cycle Assessment	3,5 CR	Schultmann
Election block: Supplementary Courses (at most 1 item)			
T-WIWI-102763	Supply Chain Management with Advanced Planning Systems	3,5 CR	Bosch, Göbelt
T-WIWI-102826	Risk Management in Industrial Supply Networks	3,5 CR	Schultmann, Wiens
T-WIWI-102828	Supply Chain Management in the Automotive Industry	3,5 CR	Heupel, Lang
T-WIWI-103134	Project Management	3,5 CR	Schultmann

Competence Certificate

The assessment is carried out as partial exams (according to section 4 (2), 1 SPO) of the core course *Production and Logistics Management* [2581954] 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

- Students describe the tasks concerning general problems of an operative production and logistics management.
- Students describe the planning tasks of supply chain management.
- Students use proficiently approaches to solve general planning problems.
- Students explain the existing interdependencies between planning tasks and applied methods.
- Students describe the main goals and set-up of software supporting tools in production and logistics management (i.e. APS, PPS-, ERP- and SCM Systems).
- Students discuss the scope of these software tools and their general disadvantages.

Prerequisites

The course *Production and Logistics Management* [2581954] and at least one additional activity are compulsory and must be examined.

Content

- Planning tasks and exemplary methods of production planning and control in supply chain management.
- Supporting software tools in production and logistics management (APS, PPS- and ERP Systems).
- Project management in the field of production and supply chain management.

Annotation

Apart from the core course the courses offered are recommendations and can be replaced by courses from the Module Industrial Production II.

Workload

The total amount of work for this module is approx. 270 hours (9 credits). The allocation is made according to the credit points of the courses of the module.

The total number of hours per course results from the effort 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

5.100 Module: Information Processing in Sensor Networks [M-INFO-100895]

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

Credits
6

Recurrence
Each summer term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101466	Information Processing in Sensor Networks	6 CR	Hanebeck

M

5.101 Module: Information Systems in Organizations [M-WIWI-104068]

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
4

Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-105777	Business Intelligence Systems	4,5 CR	Mädche, Nadj, Toreini
T-WIWI-110851	Designing Interactive Systems	4,5 CR	Gnewuch, Mädche
T-WIWI-108437	Practical Seminar: Information Systems and Service Design	4,5 CR	Mädche

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

- has a comprehensive understanding of conceptual and theoretical foundations of information systems in organizations
- is aware of the most important classes of information systems used in organizations: process-centric, information-centric and people-centric information systems.
- knows the most important activities required to execute in the pre-implementation, implementation and post-implementation phase of information systems in organizations in order to create business value
- has a deep understanding of key capabilities of business intelligence systems and/or interactive information systems used in organizations

Prerequisites

None

Content

During the last decades we witnessed a growing importance of Information Technology (IT) in the business world along with faster and faster innovation cycles. IT has become core for businesses from an operational company-internal and external customer perspective. Today, companies have to rethink their way of doing business, from an internal as well as an external digitalization perspective.

This module focuses on the internal digitalization perspective. The contents of the module abstract from the technical implementation details and focus on foundational concepts, theories, practices and methods for information systems in organizations. The students get the necessary knowledge to guide the successful digitalization of organizations. Each lecture in the module is accompanied with a capstone project that is carried out in cooperation with an industry partner.

Annotation

New module starting summer term 2018.

Workload

The total workload for this module is approximately 270 hours.

M**5.102 Module: Information Systems: Analytical and Interactive Systems [M-WIWI-104814]**

Responsible: Prof. Dr.-Ing. Klemens Böhm
Prof. Dr. Alexander Mädche

Organisation: KIT Department of Economics and Management

Part of: Information Systems

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
5

Election block: Compulsory Elective Area ()			
T-INFO-101305	Big Data Analytics	5 CR	Böhm
T-WIWI-108715	Artificial Intelligence in Service Systems	4,5 CR	Satzger
T-WIWI-109863	Business Data Analytics: Application and Tools	4,5 CR	Weinhardt
T-WIWI-105777	Business Intelligence Systems	4,5 CR	Mädche, Nadj, Toreini
T-INFO-101317	Deployment of Database Systems	5 CR	Böhm
T-WIWI-110851	Designing Interactive Systems	4,5 CR	Gnewuch, Mädche
T-WIWI-110915	Intelligent Agents and Decision Theory	4,5 CR	Geyer-Schulz
T-WIWI-103549	Intelligent CRM Architectures	4,5 CR	Geyer-Schulz
T-INFO-107499	Context Sensitive Systems	5 CR	Beigl
T-WIWI-102847	Recommender Systems	4,5 CR	Geyer-Schulz
T-WIWI-105778	Service Analytics A	4,5 CR	Fromm
T-INFO-101326	Ubiquitous Computing	5 CR	Beigl

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

The students

- are familiar with design principles of selected classes of modern analytical and interactive information systems and associated technologies
- know modern database concepts and application scenarios of modern database systems, understand the necessity of concepts for data analysis and can assess and compare approaches for the administration and analysis of large databases with regard to their effectiveness and applicability.
- know methods and techniques for designing analytical systems in the specific area of customer relationship management
- have knowledge of the basics and advanced methods and techniques of interactive information systems, especially context-sensitive and ubiquitous systems.

Content

In the module "Information Systems: Analytical and Interactive Systems" students learn about central design principles of selected classes of modern information systems and associated technologies. The module focuses on analytical and interactive information systems.

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**5.103 Module: Information Systems: Engineering and Transformation [M-WIWI-104812]**

Responsible: Prof. Dr. Sebastian Abeck
Prof. Dr. Ali Sunyaev

Organisation: KIT Department of Economics and Management

Part of: Information Systems

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
3

Election block: Compulsory Elective Area ()			
T-INFO-106061	Access Control Systems: Foundations and Practice	4 CR	Hartenstein
T-WIWI-109863	Business Data Analytics: Application and Tools	4,5 CR	Weinhardt
T-WIWI-109248	Critical Information Infrastructures	4,5 CR	Sunyaev
T-WIWI-110877	Engineering Interactive Systems	4,5 CR	
T-WIWI-109270	Human Factors in Security and Privacy	4,5 CR	Volkamer
T-INFO-101337	Internet of Everything	4 CR	Zitterbart
T-INFO-101323	IT-Security Management for Networked Systems	5 CR	Hartenstein
T-INFO-101319	Network Security: Architectures and Protocols	4 CR	Zitterbart
T-INFO-101300	Requirements Engineering	3 CR	Koziolek
T-INFO-101381	Software Architecture and Quality	3 CR	Reussner
T-WIWI-102895	Software Quality Management	4,5 CR	Oberweis
T-INFO-101271	Web Applications and Service-Oriented Architectures (II)	4 CR	Abeck

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

The student

- learns techniques and procedures for the systematic development of high-quality software.
- can apply software quality assessment methods, evaluate results, and compare certification models.
- can reflect the content of the key concepts and technologies required to develop service-oriented Web applications and model appropriate architectures, implement Web applications and assess their service characteristics.
- knows proven and novel concepts for the evaluation and analysis of (critical) IT infrastructures.
- knows methods and tools to successfully shape the digital transformation of companies under pursuit of a socio-technical paradigm.

Content

The module "Information Systems: Engineering and Transformation" deals with the systematic development and management of software, information systems/infrastructures and Internet-based services.

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

5.104 Module: Information Systems: Internet-based Markets and Services [M-WIWI-104813]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [Information Systems](#)

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
4

Election block: Compulsory Elective Area ()			
T-WIWI-109246	Digital Health	4,5 CR	Sunyaev
T-WIWI-110280	Digital Services: Business Models and Transformation	4,5 CR	Satzger
T-WIWI-107501	Energy Market Engineering	4,5 CR	Weinhardt
T-WIWI-110877	Engineering Interactive Systems	4,5 CR	
T-WIWI-102639	Business Models in the Internet: Planning and Implementation	4,5 CR	Weinhardt
T-WIWI-102640	Market Engineering: Information in Institutions	4,5 CR	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

The student

- understands the importance and potential of digitizing products and services
- can design digital markets and services with the associated business models.
- knows methods and tools to successfully design the digital transformation of products and services.
- acquires specific competencies for the digitization of domain-specific services, including healthcare and energy.

Content

The module "Information Systems: Internet-based Markets and Services" focuses on the design of Internet-based services and markets from an economic and technical point of view.

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

5.105 Module: Innovation and Growth [M-WIWI-101478]

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

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

Election block: Compulsory Elective Courses (between 9 and 10 credits)			
T-WIWI-109194	Dynamic Macroeconomics	4,5 CR	Brumm
T-WIWI-102785	Theory of Endogenous Growth	4,5 CR	Ott
T-WIWI-102840	Innovation Theory and Policy	4,5 CR	Ott

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

Students shall be given the ability to

- know the basic techniques for analyzing static and dynamic optimization models that are applied in the context of micro- and macroeconomic theories
- understand the important role of innovation to the overall economic growth and welfare
- identify the importance of alternative incentive mechanisms for the emergence and dissemination of innovations
- explain, in which situations market interventions by the state, for example taxes and subsidies, can be legitimized, and evaluate them in the light of economic welfare

Prerequisites

None

Content

The module includes courses that deal with issues of innovation and growth in the context of micro- and macroeconomic theories. The dynamic analysis makes it possible to analyze the consequences of individual decisions over time, and sheds light on the tension between static and dynamic efficiency in particular. In this context is also analyzed, which policy is appropriate to carry out corrective interventions in the market and thus increase welfare in the presence of market failure.

Recommendation

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

Workload

Total expenditure of time for 9 credits: 270 hours

Attendance time per lecture: 3x14h

Preparation and wrap-up time per lecture: 3x14h

Rest: Exam Preparation

The exact distribution is subject to the credits of the courses of the module.

M**5.106 Module: Innovation Economics [M-WIWI-101514]**

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

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	German/English	4	2

Election block: Compulsory Elective Courses (between 9 and 10 credits)			
T-WIWI-102840	Innovation Theory and Policy	4,5 CR	Ott
T-WIWI-102906	Methods in Economic Dynamics	1,5 CR	Ott
T-WIWI-109864	Product and Innovation Management	3 CR	Klarmann
T-WIWI-102789	Seminar in Economic Policy	3 CR	Ott

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

Students shall be given the ability to

- understand the important role of innovation for economic growth and welfare
- understand the relevance of alternative incentive mechanisms for the emergence and dissemination of innovations
- know basic terms of product and innovation concepts
- know fundamental concepts of innovation management
- work with fundamental theoretical innovation models and to implement them in appropriate computer algebra systems
- query appropriate data sources and to analyse and visualise them using statistical methods

Prerequisites

None

Content

The module provides students with knowledge about implications of technological and organizational changes.

Addressed economic issues are incentives for developing innovations, diffusion processes, and associated effects. In this context the module analyses appropriate policies in the presence of market failures to take corrective action on the market process and thus to increase the dynamic efficiency of economies.

Furthermore, the module offers the possibility to learn about different aspects of theoretical modelling of innovation-based growth as a part of the seminar and the methods-workshop. This includes the implementation of formal models in computer algebra systems as well as recording, processing and econometric analysis of related data from relational databases (concerning for example patents or trademarks). Moreover, methods of network theory are applied.

Finally, the module emphasises the business perspective: Issues of all stages of innovation processes will be discussed, from innovation strategies up to the market commercialisation.

Recommendation

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012] and Economics II [2600014]. Further, it is assumed that students have interest in using quantitative-mathematical methods.

Workload

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

M

5.107 Module: Innovation Management [M-WIWI-101507]

Responsible: Prof. Dr. Marion Weissenberger-Eibl
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Business Administration)

Credits
9

Recurrence
Each term

Duration
1 semester

Language
German/English

Level
4

Version
7

Mandatory			
T-WIWI-102893	Innovation Management: Concepts, Strategies and Methods	3 CR	Weissenberger-Eibl
Election block: Compulsory Elective Courses (1 item)			
T-WIWI-102873	Current Issues in Innovation Management	3 CR	Weissenberger-Eibl
T-WIWI-110867	The negotiation of open innovation	3 CR	Beyer
T-WIWI-108875	Digital Transformation and Business Models	3 CR	Koch
T-WIWI-102852	Case Studies Seminar: Innovation Management	3 CR	Weissenberger-Eibl
T-WIWI-108774	Analyzing and Evaluating Innovation Processes	3 CR	Beyer
T-WIWI-110234	Innovation Processes Live	3 CR	Beyer
T-WIWI-110263	Methods in Innovation Management	3 CR	Koch
T-WIWI-102853	Roadmapping	3 CR	Koch
T-WIWI-110987	Seminar Methods along the Innovation process	3 CR	Beyer
T-WIWI-110986	Strategic Foresight China	3 CR	Weissenberger-Eibl
T-WIWI-109932	A Closer Look at Social Innovation	3 CR	Beyer
T-WIWI-102858	Technology Assessment	3 CR	Koch
T-WIWI-102854	Technologies for Innovation Management	3 CR	Koch
Election block: Supplementary Courses (1 item)			
T-WIWI-102873	Current Issues in Innovation Management	3 CR	Weissenberger-Eibl
T-WIWI-102866	Design Thinking	3 CR	Terzidis
T-WIWI-110867	The negotiation of open innovation	3 CR	Beyer
T-WIWI-108875	Digital Transformation and Business Models	3 CR	Koch
T-WIWI-102833	Entrepreneurial Leadership & Innovation Management	3 CR	Terzidis
T-WIWI-102864	Entrepreneurship	3 CR	Terzidis
T-WIWI-102852	Case Studies Seminar: Innovation Management	3 CR	Weissenberger-Eibl
T-WIWI-108774	Analyzing and Evaluating Innovation Processes	3 CR	Beyer
T-WIWI-110234	Innovation Processes Live	3 CR	Beyer
T-WIWI-110263	Methods in Innovation Management	3 CR	Koch
T-WIWI-102853	Roadmapping	3 CR	Koch
T-WIWI-110987	Seminar Methods along the Innovation process	3 CR	Beyer
T-WIWI-110986	Strategic Foresight China	3 CR	Weissenberger-Eibl
T-WIWI-109932	A Closer Look at Social Innovation	3 CR	Beyer
T-WIWI-102854	Technologies for Innovation Management	3 CR	Koch
T-WIWI-102858	Technology Assessment	3 CR	Koch

Competence Certificate

See German version.

Competence Goal

Students develop a comprehensive understanding of the innovation process and its conditionality. There is an additional focus on the concepts and processes which are of particular relevance with regard to shaping the entire process. Various strategies and methods are then taught based on this.

After completing the module, students should have developed a systemic understanding of the innovation process and be able to shape this by developing and applying suitable methods.

Prerequisites

The lecture "Innovation Management: Concepts, Strategies and Methods" and one of the seminars of the chair for Innovation and Technology Management are compulsory. The third course can be chosen from the courses of the module.

Content

The Innovation Management: Concepts, Strategies and Methods lecture course teaches concepts, strategies and methods which help students to form a systemic understanding of the innovation process and how to shape it. Building on this holistic understanding, the seminar courses then go into the subjects in greater depth and address specific processes and methods which are central to innovation management.

Recommendation

None

Workload

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

M**5.108 Module: Innovative Concepts for Programming Industrial Robots [M-INFO-100791]**

Responsible: Prof. Dr.-Ing. Björn Hein
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101328	Innovative Concepts for Programming Industrial Robots	4 CR	Hein



5.109 Module: Integrated Network and Systems Management [M-INFO-100747]

Responsible: Prof. Dr. Bernhard Neumair
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101284	Integrated Network and Systems Management	4 CR	Neumair

Recommendation
 Siehe Teilleistung

M**5.110 Module: Intellectual Property Law [M-INFO-101215]**

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: Law

Credits
9

Recurrence
Each term

Duration
1 semester

Language
German

Level
4

Version
3

Election block: Intellectual Property Law (at least 1 item as well as at least 9 credits)			
T-INFO-102036	Computer Contract Law	3 CR	Bartsch
T-INFO-101308	Copyright	3 CR	Dreier
T-INFO-101310	Patent Law	3 CR	Hössle, Koch
T-INFO-101313	Trademark and Unfair Competition Law	3 CR	Matz
T-INFO-101307	Internet Law	3 CR	Dreier
T-INFO-108462	Selected Legal Issues of Internet Law	3 CR	Dreier

Prerequisites
None

M

5.111 Module: Intelligent Systems and Services [M-WIWI-101456]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: Informatics

Credits
9

Recurrence
Each term

Duration
1 semester

Language
German/English

Level
4

Version
6

Election block: Compulsory Elective Courses (between 9 and 10 credits)			
T-WIWI-102661	Database Systems and XML	4,5 CR	Oberweis
T-WIWI-106423	Information Service Engineering	4,5 CR	Sack
T-WIWI-110548	Advanced Lab Informatics (Master)	4,5 CR	Professorenschaft des Fachbereichs Informatik
T-WIWI-102666	Knowledge Discovery	4,5 CR	Sure-Vetter

Competence Certificate

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

Algorithms for Internet Applications [T-WIWI-102658]: The examination will be offered latest until summer term 2017 (repeaters only).

Competence Goal

Students

- know the different machine learning procedures for the supervised as well as the unsupervised learning,
- identify the pros and cons of the different learning methods,
- apply the discussed network learning methods in specific scenarios,
- compare the practicality of methods and algorithms with alternative approaches.

Prerequisites

None

Content

In the broader sense learning systems are understood as biological organisms and artificial systems which are able to change their behavior by processing outside influences. Network learning methods based on symbolic, statistic and neuronal approaches are the focus of Computer Sciences.

In this module the most important network learning methods are introduced and their applicability is discussed with regard to different information sources such as data texts and images considering especially procedures for knowledge acquirement via data and text mining, natural analogue procedures as well as the application of organic learning procedures within the finance sector.

Annotation

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

M

5.112 Module: Interactive Computer Graphics [M-INFO-100732]

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
5

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101269	Interactive Computer Graphics	5 CR	Dachsbacher

M

5.113 Module: Internet of Everything [M-INFO-100800]

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

Credits
4

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101337	Internet of Everything	4 CR	Zitterbart

M**5.114 Module: Introduction to Bioinformatics for Computer Scientists [M-INFO-100749]****Responsible:** Prof. Dr. Alexandros Stamatakis**Organisation:** KIT Department of Informatics**Part of:** [Informatics](#)**Credits**
3**Recurrence**
Each winter term**Duration**
1 term**Language**
German**Level**
4**Version**
1

Mandatory			
T-INFO-101286	Introduction to Bioinformatics for Computer Scientists	3 CR	Stamatakis

M

5.115 Module: Introduction to Video Analysis [M-INFO-100736]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101273	Introduction to Video Analysis	3 CR	Beyerer

M**5.116 Module: IT-Security Management for Networked Systems [M-INFO-100786]**

Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101323	IT-Security Management for Networked Systems	5 CR	Hartenstein



5.117 Module: Lab Course Heterogeneous Computing [M-INFO-104072]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
6

Recurrence
Each summer term

Language
German/English

Level
4

Version
1

Mandatory			
T-INFO-108447	Lab Course Heterogeneous Computing	6 CR	Karl

Prerequisites

None

M**5.118 Module: Lab Course: Natural Language Processing and Software Engineering [M-INFO-103138]**

Responsible: Prof. Dr. Walter Tichy
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-106239	Lab Course: Natural Language Processing and Software Engineering	5 CR	Tichy

M**5.119 Module: Lab: Designing Embedded Application-Specific Processors [M-INFO-101631]**

Responsible: Prof. Dr.-Ing. Jörg Henkel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-103115	Lab: Designing Embedded Application-Specific Processors	4 CR	Henkel

M**5.120 Module: Lab: Designing Embedded Systems [M-INFO-103808]**

Responsible: Prof. Dr.-Ing. Jörg Henkel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Each term

Language
English

Level
4

Version
1

Mandatory			
T-INFO-107689	Lab: Designing Embedded Systems	4 CR	Henkel

Prerequisites

None

M

5.121 Module: Lab: Efficient parallel C++ [M-INFO-103506]

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

Credits
6

Recurrence
Irregular

Language
German/English

Level
4

Version
1

Mandatory			
T-INFO-106992	Lab: Efficient parallel C++	6 CR	Sanders

M

5.122 Module: Lab: Graph Visualization in Practice [M-INFO-103302]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Irregular

Language
German

Level
4

Version
1

Mandatory			
T-INFO-106580	Lab: Graph Visualization in Practice	5 CR	Wagner

M

5.123 Module: Lab: Internet of Things (IoT) [M-INFO-103706]

Responsible: Prof. Dr.-Ing. Jörg Henkel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Each term

Language
English

Level
4

Version
1

Mandatory			
T-INFO-107493	Lab: Internet of Things (IoT)	4 CR	Henkel

Prerequisites

None

M

5.124 Module: Lab: Low Power Design and Embedded Systems [M-INFO-104031]

Responsible: Prof. Dr.-Ing. Jörg Henkel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each term

Language
English

Level
4

Version
1

Mandatory			
T-INFO-108323	Lab: Low Power Design and Embedded Systems	3 CR	Henkel

M**5.125 Module: Laboratory Course Algorithm Engineering [M-INFO-102072]**

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

Credits
6

Recurrence
Irregular

Language
German/English

Level
4

Version
1

Mandatory			
T-INFO-104374	Laboratory Course Algorithm Engineering	6 CR	Sanders, Ueckerdt, Wagner

M**5.126 Module: Laboratory in Cryptanalysis [M-INFO-101559]**

Responsible: Prof. Dr. Dennis Hofheinz
 Prof. Dr. Jörn Müller-Quade

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
3

Recurrence
Each term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-102990	Laboratory in Cryptanalysis	3 CR	Hofheinz, Müller-Quade

M**5.127 Module: Laboratory in Cryptography [M-INFO-101558]**

Responsible: Prof. Dr. Dennis Hofheinz
 Prof. Dr. Jörn Müller-Quade

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
3

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-102989	Laboratory in Cryptography	3 CR	Hofheinz, Müller-Quade

M**5.128 Module: Laboratory in Security [M-INFO-101560]**

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

Credits
4

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-102991	Laboratory in Security	4 CR	Hofheinz, Müller-Quade



5.129 Module: Localization of Mobile Agents [M-INFO-100840]

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

Credits
6

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101377	Localization of Mobile Agents	6 CR	Hanebeck

M

5.130 Module: Low Power Design [M-INFO-100807]

Responsible: Prof. Dr.-Ing. Jörg Henkel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101344	Low Power Design	3 CR	Henkel

M

5.131 Module: Machine Learning [M-WIWI-103356]

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: Informatics

Credits
9

Recurrence
Each term

Duration
1 semester

Language
German/English

Level
4

Version
2

Election block: Compulsory Elective Courses (between 9 and 10 credits)			
T-WIWI-106340	Machine Learning 1 - Basic Methods	4,5 CR	Zöllner
T-WIWI-106341	Machine Learning 2 – Advanced Methods	4,5 CR	Zöllner
T-WIWI-109985	Project Lab Cognitive Automobiles and Robots	4,5 CR	Zöllner
T-WIWI-109983	Project Lab Machine Learning	4,5 CR	Zöllner

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

- Students gain knowledge of the basic methods in the field of machine learning.
- Students understand advanced concepts of machine learning and their application.
- Students can classify, formally describe and evaluate methods of machine learning.
- Students can use their knowledge to select suitable models and methods for selected problems in the field of machine learning.

Prerequisites

None

Content

The subject area of machine intelligence and, in particular, machine learning, taking into account real challenges of complex application domains, is a rapidly expanding field of knowledge and the subject of numerous research and development projects.

The lecture "Machine Learning 1" covers both symbolic learning methods such as inductive learning (learning from examples, learning by observation), deductive learning (explanation-based learning) and learning from analogies, as well as subsymbolic techniques such as neural networks, support vector machines, genetic Algorithms and reinforcement learning. The lecture introduces the basic principles as well as fundamental structures of learning systems and the learning theory and examines the previously developed algorithms. The design and operation of learning systems is presented and explained in some examples, especially in the fields of robotics, autonomous mobile systems and image processing.

The lecture "Machine Learning 2" deals with advanced methods of machine learning such as semi-supervised and active learning, deep neural networks (deep learning), pulsed networks, hierarchical approaches, e.g. As well as dynamic, probabilistic relational methods. Another focus is the embedding and application of machine learning methods in real systems.

The lecture introduces the latest basic principles as well as extended basic structures and elucidates previously developed algorithms. The structure and the mode of operation of the methods and methods are presented and explained by means of some application scenarios, especially in the field of technical (sub) autonomous systems (robotics, neurorobotics, image processing, etc.).

Workload

The total workload for this module is approximately 270 hours.



5.132 Module: Machine Learning - Basic Methods [M-INFO-105252]

Responsible: Prof. Dr. Gerhard Neumann
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each winter term

Duration
1 term

Language
English

Level
4

Version
4

Mandatory			
T-INFO-110630	Machine Learning - Basic Methods	5 CR	Neumann

M**5.133 Module: Machine Translation [M-INFO-100848]**

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
6

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101385	Machine Translation	6 CR	Waibel

M

5.134 Module: Management Accounting [M-WIWI-101498]

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

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	English	4	2

Mandatory			
T-WIWI-102800	Management Accounting 1	4,5 CR	Wouters
T-WIWI-102801	Management Accounting 2	4,5 CR	Wouters

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 13 SPO) of the courses 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 familiar with various management accounting methods,
- can apply these methods for cost estimation, profitability analysis, and product costing,
- are able to analyze short-term and long-decisions with these methods,
- have the capacity to devise instruments for organizational control.

Prerequisites

None

Content

The module consists of two courses "Management Accounting 1" and "Management Accounting 2". The emphasis is on structured learning of management accounting techniques.

Annotation

The following courses are part of this module:

- The course Management Accounting 1, which is offered in every sommer semester
- The course Management Accounting 2, which is offered in every winter semester

Workload

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



5.135 Module: Market Engineering [M-WIWI-101446]

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

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German/English	4	7

Mandatory			
T-WIWI-102640	Market Engineering: Information in Institutions	4,5 CR	Weinhardt
Election block: Supplementary Courses (4,5 credits)			
T-WIWI-102613	Auction Theory	4,5 CR	Ehrhart
T-WIWI-108880	Blockchains & Cryptofinance	4,5 CR	Schuster, Uhrig-Homburg
T-WIWI-110797	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-107501	Energy Market Engineering	4,5 CR	Weinhardt
T-WIWI-107503	Energy Networks and Regulation	4,5 CR	Weinhardt
T-WIWI-102614	Experimental Economics	4,5 CR	Weinhardt
T-WIWI-111109	KD ² Lab Hands-On Research Course: New Ways and Tools in Experimental Economics	4,5 CR	Weinhardt
T-WIWI-107504	Smart Grid Applications	4,5 CR	Weinhardt

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

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

Prerequisites

The course *Market Engineering: Information in Institutions* [2540460] is compulsory and must be examined.

Content

This module explains the dependencies between the design von markets and their success. Markets are complex interaction of different institution and participants in a market behave strategically according to the market rules. The development and the design of markets or market mechanisms has a strong influence on the behavior of the participants. A systematic approach and a thorough analysis of existing markets is inevitable to design, create and operate a market place successfully. the approaches for a systematic analysis are explained in the mandatory course *Market Engineering* [2540460] by discussing theories about mechanism design and institutional economics. The student can deepen his knowledge about markets in a second course.

Recommendation

None

Annotation

The course "Computational Economics" [2590458] will not be offered any more in this module from winter term 2015/2016 on. The examination will be offered latest until summer term 2016 (repeaters only).

Workload

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



5.136 Module: Marketing and Sales Management [M-WIWI-105312]

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

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

Election block: Compulsory Elective Courses (at least 1 item)			
T-WIWI-111100	Current Directions in Consumer Psychology	3 CR	Scheibehenne
T-WIWI-111099	Judgment and Decision Making	4,5 CR	Scheibehenne
T-WIWI-107720	Market Research	4,5 CR	Klarmann
T-WIWI-109864	Product and Innovation Management	3 CR	Klarmann
Election block: Supplementary Courses (at most 1 item)			
T-WIWI-102834	Case Studies in Sales and Pricing	1,5 CR	Klarmann
T-WIWI-106981	Digital Marketing and Sales in B2B	1,5 CR	Konhäuser
T-WIWI-110985	International Business Development and Sales	6 CR	Casenave , Klarmann, Terzidis
T-WIWI-102835	Marketing Strategy Business Game	1,5 CR	Klarmann
T-WIWI-102891	Price Negotiation and Sales Presentations	1,5 CR	Klarmann, Schröder
T-WIWI-102883	Pricing	4,5 CR	Feurer

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. For passing the module exam in every singled partial exam the respective minimum requirements has to be achieved.

When every singled examination is passed, 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

- have an advanced knowledge about central marketing contents
- have a fundamental understanding of the marketing instruments
- know and understand several strategic concepts and how to implement them
- are able to implement their extensive marketing knowledge in a practical context
- know several qualitative and quantitative approaches to prepare decisions in Marketing
- have the theoretical knowledge to write a master thesis in Marketing
- have the theoretical knowledge to work in/together with the Marketing department

Prerequisites

None

Content

The aim of this module is to deepen central marketing contents in different areas.

Annotation

Please note that none of the listed 1.5-ECTS courses will take place in the winter semester 2020/21 due to a research semester. The courses concerned will probably be offered again from WS21/22 onwards.

Please note that only one of the listed 1,5-ECTS courses can be chosen in the module.

Workload

The total workload for this module is approximately 270 hours.



5.137 Module: Mathematical Programming [M-WIWI-101473]

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

Credits
9

Recurrence
Each term

Duration
1 semester

Language
German/English

Level
4

Version
6

Election block: Compulsory Elective Courses (at most 2 items)			
T-WIWI-102719	Mixed Integer Programming I	4,5 CR	Stein
T-WIWI-102726	Global Optimization I	4,5 CR	Stein
T-WIWI-103638	Global Optimization I and II	9 CR	Stein
T-WIWI-102856	Convex Analysis	4,5 CR	Stein
T-WIWI-102724	Nonlinear Optimization I	4,5 CR	Stein
T-WIWI-103637	Nonlinear Optimization I and II	9 CR	Stein
T-WIWI-102855	Parametric Optimization	4,5 CR	Stein
Election block: Supplementary Courses (at most 2 items)			
T-WIWI-106548	Advanced Stochastic Optimization	4,5 CR	Rebennack
T-WIWI-102720	Mixed Integer Programming II	4,5 CR	Stein
T-WIWI-102727	Global Optimization II	4,5 CR	Stein
T-WIWI-102723	Graph Theory and Advanced Location Models	4,5 CR	Nickel
T-WIWI-106549	Large-scale Optimization	4,5 CR	Rebennack
T-WIWI-103124	Multivariate Statistical Methods	4,5 CR	Grothe
T-WIWI-102725	Nonlinear Optimization II	4,5 CR	Stein
T-WIWI-102715	Operations Research in Supply Chain Management	4,5 CR	Nickel
T-WIWI-110162	Optimization Models and Applications	4,5 CR	Sudermann-Merx

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

The student

- names and describes basic notions for advanced optimization methods, in particular from continuous and mixed integer programming,
- 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,
- identifies drawbacks of the solution methods and, if necessary, is able to make suggestions to adapt them to practical problems.

Prerequisites

At least one of the courses "Mixed Integer Programming I", "Parametric Optimization", "Convex Analysis", "Nonlinear Optimization I" and "Global Optimization I" has to be taken.

Content

The modul focuses on theoretical foundations as well as solution algorithms for optimization problems with continuous and mixed integer decision variables.

Annotation

The lectures are partly offered irregularly. The curriculum of the next three years is available online (www.ior.kit.edu).

For the lectures of Prof. Stein a grade of 30 % of the exercise course has to be fulfilled. The description of the particular lectures is more detailed.

Workload

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

M**5.138 Module: Mechanisms and Applications of Workflow Systems [M-INFO-100720]**

Responsible: Jutta Mülle
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101257	Mechanisms and Applications of Workflow Systems	5 CR	Mülle

M

5.139 Module: Medical Robotics [M-INFO-100820]

Responsible: Prof. Dr.-Ing. Torsten Kröger
Jun.-Prof. Dr. Franziska Mathis-Ullrich

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101357	Medical Robotics	3 CR	Kröger, Mathis-Ullrich

M

5.140 Module: Meshes and Point Clouds [M-INFO-100812]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101349	Meshes and Point Clouds	3 CR	Prautzsch

M

5.141 Module: Microeconomic Theory [M-WIWI-101500]

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

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

Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-102609	Advanced Topics in Economic Theory	4,5 CR	Mitusch
T-WIWI-102861	Advanced Game Theory	4,5 CR	Ehrhart, Puppe, Reiß
T-WIWI-102859	Social Choice Theory	4,5 CR	Puppe
T-WIWI-102613	Auction Theory	4,5 CR	Ehrhart
T-WIWI-105781	Incentives in Organizations	4,5 CR	Nieken

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

Students

- are able to model practical microeconomic problems mathematically and to analyze them with respect to positive and normative questions,
- understand individual incentives and social outcomes of different institutional designs.

An example of a positive question is: which regulation policy results in which firm decisions under imperfect competition? An example of a normative question is: which voting rule has appealing properties?

Prerequisites

None

Content

The student should gain an understanding of advanced topics in economic theory, game theory and welfare economics. Core topics are, among others, strategic interactions in markets, cooperative and non-cooperative bargaining (Advanced Game Theory), allocation under asymmetric information and general equilibrium over time (Advanced Topics in Economic Theory), voting and the aggregation of preferences and judgements (Social Choice Theory).

Workload

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

M

5.142 Module: Mobile Communication [M-INFO-100785]

Responsible: Prof. Dr. Oliver Waldhorst
 Prof. Dr. Martina Zitterbart

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
4

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101322	Mobile Communication	4 CR	Waldhorst, Zitterbart

M**5.143 Module: Mobile Robots – Practical Course [M-INFO-102977]**

Responsible: Prof. Dr.-Ing. Rüdiger Dillmann
Dr.-Ing. Arne Rönnau

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
6

Recurrence
Each winter term

Duration
1 semester

Language
German

Level
4

Version
1

Mandatory			
T-INFO-105951	Mobile Robots – Practical Course	6 CR	Dillmann



5.144 Module: Model-Driven Software Development [M-INFO-100741]

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101278	Model Driven Software Development	3 CR	Reussner

Prerequisites

None



5.145 Module: Models of Parallel Processing [M-INFO-100828]

Responsible: Thomas Worsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101365	Models of Parallel Processing	5 CR	Worsch

Recommendation
 Siehe Teilleistung



5.146 Module: Module Master Thesis [M-WIWI-104833]

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

Organisation: KIT Department of Economics and Management

Part of: [Master Thesis](#)

Credits
30

Recurrence
Each term

Language
German

Level
3

Version
1

Mandatory			
T-WIWI-103142	Master Thesis	30 CR	Studiendekan der KIT-Fakultät für Informatik, Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

Competence Certificate

Examination by two examiners from the two faculties. For details refer to examination regulation. The examiner has to be involved in the degree programme. Involved in the degree programme are the persons that coordinate a module or a lecture of the degree programme.

Competence Goal

The student can independently handle a complex and unfamiliar subject based on scientific criteria and the current state of research.

He/she is in a position to critically analyze and structure the researched information as well as derive principles and regularities. He/she knows how to apply the thereby achieved results to solve the task at hand. Taking into account this knowledge and his/her interdisciplinary knowledge, he/she can draw own conclusions, derive improvement potentials, propose and implement science-based decisions.

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 sensibly structure a research paper, document results and clearly communicate the results in scientific form.

Prerequisites

Regulated in §14 of the examination regulation.

Content

- The master thesis shows that the candidate can autonomously investigate a problem from his discipline with scientific methods according to the state-of-the-art of the discipline within a specified time period.
- The master thesis can be written in German or English.
- The topic of a master thesis can be accepted or chosen by each of the examiners according to examination regulation. The examiner accepting a topic for a master thesis acts as the first supervisor of this thesis.
- Writing a master thesis with a supervisor who is not a member of the two faculties participating in the degree programme (Department of Informatics, Department of Economics and Management) requires acceptance by the examination board of the degree programme. The candidate must have an opportunity to make suggestions for the topic of the master thesis.
- Candidates can write a master thesis in teams. However, this requires that the contribution and performance of each candidate to the thesis is identifiable according to objective criteria which allow a unique delineation of each candidate's contribution. The contribution of each candidate regarded in isolation must fulfill the requirements a individual master thesis.
- In exceptional cases and upon request of the candidate, the chairman of the examination board chooses a supervisor and requests that this supervisor provides the candidate with a topic for the master thesis within 4 weeks after the request. In this case, the candidate is informed by the chairman of the examination board about the topic selected.
- Topic, specification of research tasks and the volume of the master thesis should be limited by the supervisor, so that the master thesis can be written with the assigned workload of 30 credits (750-900h).
- The master thesis must contain the following declaration of the candidate: "I truthfully assure that I have autonomously written this master thesis. I have quoted all sources used precisely and completely. I have labelled everything which has been taken from the work of others with or without change." A master thesis without this declaration will not be accepted.
- The date of the assignment of the topic to a candidate as well as the date of delivery of the master thesis should be registered at the examination board. The candidate can return a topic for the master thesis only one time and only within a period of two month after he has received the topic. Upon a request of the candidate with reasons supporting an extension, the examination board may extend the deadline for the delivery of the master thesis by a maximum of three months. A master thesis not delivered within time is graded as "fail" except when the candidate is not responsible for this delay (e.g. protection of motherhood).
- The master thesis is reviewed and graded by the supervisor and the additional examiner. The team of supervisor and examiner must represent both faculties participating in the degree programme (Department of Informatics, Department of Economics and Management). At least one of the two must be professor or junior professor. If the grades of the supervisor and the examiner differ, the examination board sets the mark within this limit.
- Reviewing and grading should be done within 8 weeks after delivery of the master thesis.

Workload

The total workload for this module is approximately 900 hours. For further information see German version.

M

5.147 Module: Multicore Computers and Computer Clusters [M-INFO-100788]

Responsible: Prof. Dr. Walter Tichy
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101325	Multicore Computers and Computer Clusters	4 CR	Tichy

M**5.148 Module: Multicore Programming in Practice: Tools, Models, Languages [M-INFO-100985]**

Responsible: Prof. Dr. Walter Tichy
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
6

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101565	Multicore Programming in Practice: Tools, Models, Languages	6 CR	Tichy

M**5.149 Module: Multi-dimensional Signal Processing and Image Exploitation with Graphic Cards and Other Manycore-Processors [M-INFO-103154]**

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory			
T-INFO-106278	Multi-Dimensional Signal Processing and Image Exploitation with Graphic Cards and Other Manycore-Processors	3 CR	Beyerer, Perschke

Competence Goal

The student will gain an overview about the current parallel hardware architectures, which can be used for solving image processing problems. They will be able to analyse, parallelize and optimize image processing algorithms with respect to different hardware platforms. The introduction into OpenCL will give them the ability to implement the algorithms on graphic cards and multi-core processors.

Content

The lecture will give an overview about the different forms of parallelism of an algorithm and the corresponding mapping on hardware architectures. It will introduce the different layouts of the hardware architectures and the different programming models.

To allow for a common programming model for both graphic cards and multi-core processors, the introduction into OpenCL will be very detailed. The OpenCL programming model, the API and the OpenCL C language will be explained. For an optimized use of OpenCL it is mandatory to understand the underlying memory model in all its details. With tutorials during the lecture the students will get the opportunity to implement image processing algorithms on different architectures and optimize them accordingly. A graphic card and a Xeon-Phi accelerator board will be provided.

M

5.150 Module: Natural Language Dialog Systems [M-INFO-102414]

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Irregular

Language
German

Level
4

Version
1

Mandatory			
T-INFO-104780	Practical Course Natural Language Dialog Systems	3 CR	Waibel

M

5.151 Module: Natural Language Processing and Dialog Modeling [M-INFO-100899]

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101473	Natural Language Processing and Dialog Modeling	3 CR	Waibel

M**5.152 Module: Natural Language Processing and Software Engineering [M-INFO-100735]****Responsible:** Prof. Dr.-Ing. Anne Koziolk**Organisation:** KIT Department of Informatics**Part of:** [Informatics](#)**Credits**
3**Recurrence**
Each winter term**Duration**
1 term**Language**
German**Level**
4**Version**
1

Mandatory			
T-INFO-101272	Natural Language Processing and Software Engineering	3 CR	Koziolk



5.153 Module: Network Economics [M-WIWI-101406]

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

Credits	Recurrence	Language	Level	Version
9	Each term	German/English	4	2

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-100005	Competition in Networks	4,5 CR	Mitusch
T-WIWI-100007	Transport Economics	4,5 CR	Mitusch, Szimba
T-WIWI-102609	Advanced Topics in Economic Theory	4,5 CR	Mitusch
T-WIWI-102712	Regulation Theory and Practice	4,5 CR	Mitusch
T-WIWI-102713	Telecommunication and Internet Economics	4,5 CR	Mitusch

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 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

The students

- have acquired the basic knowledge for a future job in a network company or in a regulatory agency, ministry etc.
- recognize the specific characterizations of network sectors, know fundamental methods for an economic analysis of network sectors and recognize the interfaces for an interdisciplinary cooperation of economists, engineers and lawyers
- understand the interactions between infrastructures, control systems, and the users of networks, especially concerning their implications on investments, price setting and competitive behavior, and they can model or simulate exemplary applications
- can assess the necessity of regulation of natural monopolies and identify regulatory measures that are important for networks.

Prerequisites

None

Content

The module is concerned with network or infrastructure industries in the economy, e.g. telecommunication, traffic and energy sectors. These sectors are characterized by close interdependencies of operators and users of infrastructure as well as on states. States intervene in various forms, by the public and regulation authorities, due to the importance of network industries and due to limited abilities of markets to work properly in these industries. The students are supposed to develop a broad knowledge of these sectors and of the political options available.

Recommendation

Basics of microeconomics obtained within the undergraduate programme (B.Sc) of economics are required.

Workload

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

M

5.154 Module: Network Security: Architectures and Protocols [M-INFO-100782]

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

Credits
4

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101319	Network Security: Architectures and Protocols	4 CR	Zitterbart

M**5.155 Module: Next Generation Internet [M-INFO-100784]**

Responsible: Dr.-Ing. Roland Bless
Prof. Dr. Martina Zitterbart

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
4

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101321	Next Generation Internet	4 CR	Bless, Zitterbart

M

5.156 Module: Operations Research in Supply Chain Management [M-WIWI-102832]

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
7

Election block: Compulsory Elective Courses (at most 2 items)			
T-WIWI-102723	Graph Theory and Advanced Location Models	4,5 CR	Nickel
T-WIWI-106200	Modeling and OR-Software: Advanced Topics	4,5 CR	Nickel
T-WIWI-102715	Operations Research in Supply Chain Management	4,5 CR	Nickel
Election block: Supplementary Courses (at most 2 items)			
T-WIWI-106546	Introduction to Stochastic Optimization	4,5 CR	Rebennack
T-WIWI-102718	Discrete-Event Simulation in Production and Logistics	4,5 CR	Nickel
T-WIWI-102719	Mixed Integer Programming I	4,5 CR	Stein
T-WIWI-102720	Mixed Integer Programming II	4,5 CR	Stein
T-WIWI-110162	Optimization Models and Applications	4,5 CR	Sudermann-Merx
T-WIWI-106549	Large-scale Optimization	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 SCM and their respective optimization problems,
- is acquainted with classical location problem models (in planes, in 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 "Operations Research in Supply Chain Management", "Graph Theory and Advanced Location Models", "Modeling and OR-Software: Advanced Topics" and "Special Topics of Stochastic Optimization (elective)" 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 SCM. On the one hand, the determination of optimal locations within a supply chain is addressed. Strategic decisions concerning the location of facilities as 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

Basic knowledge as conveyed in the module *Introduction to Operations Research* is assumed.

Annotation

Some lectures and courses are offered irregularly.

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

Workload

Total effort for 9 credits: ca. 270 hours

- Presence time: 84 hours
- Preparation/Wrap-up: 112 hours
- Examination and examination preparation: 74 hours

M**5.157 Module: Optimization and Synthesis of Embedded Systems (ES1) [M-INFO-100830]**

Responsible: Prof. Dr.-Ing. Jörg Henkel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101367	Optimization and Synthesis of Embedded Systems (ES1)	3 CR	Henkel

M

5.158 Module: Parallel Algorithms [M-INFO-100796]

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

Credits
5

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101333	Parallel Algorithms	5 CR	Sanders

M**5.159 Module: Parallel Computer Systems and Parallel Programming [M-INFO-100808]**

Responsible: Prof. Dr. Achim Streit
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101345	Parallel Computer Systems and Parallel Programming	4 CR	Streit

M

5.160 Module: Pattern Recognition [M-INFO-100825]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101362	Pattern Recognition	3 CR	Beyerer

M

5.161 Module: Photorealistic Rendering [M-INFO-100731]

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
5

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101268	Photorealistic Rendering	5 CR	Dachsbacher

M

5.162 Module: Practical Course Applied Telematics [M-INFO-101889]

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

Credits
6

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-103585	Practical Course Applied Telematics	6 CR	Zitterbart

M**5.163 Module: Practical Course Automatic Speech Recognition [M-INFO-102411]**

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-104775	Practical Course Automatic Speech Recognition	3 CR	Waibel

M

5.164 Module: Practical Course Circuit Design with Intel Galileo [M-INFO-102353]

Responsible: Prof. Dr. Mehdi Baradaran Tahoori

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
3

Recurrence
Each term

Language
German/English

Level
4

Version
1

Mandatory			
T-INFO-105580	Practical Course Circuit Design with Intel Galileo	3 CR	Tahoori

M**5.165 Module: Practical Course Computer Vision for Human-Computer Interaction [M-INFO-102966]****Responsible:** Prof. Dr.-Ing. Rainer Stiefelhagen**Organisation:** KIT Department of Informatics**Part of:** [Informatics](#)**Credits**
6**Recurrence**
Each summer term**Language**
German**Level**
4**Version**
3

Mandatory			
T-INFO-105943	Practical Course Computer Vision for Human-Computer Interaction	6 CR	Stiefelhagen

M**5.166 Module: Practical Course Data Management and Data Analysis [M-INFO-103050]**

Responsible: Prof. Dr. Achim Streit
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Each term

Language
German/English

Level
4

Version
1

Mandatory			
T-INFO-106066	Practical Course Data Management and Data Analysis	4 CR	Streit

M**5.167 Module: Practical Course Decentralized Systems and Network Services [M-INFO-103047]**

Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Irregular

Language
German

Level
4

Version
1

Mandatory			
T-INFO-106063	Practical Course Decentralized Systems and Network Services	4 CR	Hartenstein

M

5.168 Module: Practical Course FPGA Programming [M-INFO-102661]

Responsible: Prof. Dr. Mehdi Baradaran Tahoori

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
3

Recurrence
Each term

Language
English

Level
4

Version
1

Mandatory			
T-INFO-105576	Practical Course FPGA Programming	3 CR	Tahoori

M**5.169 Module: Practical Course Model-Driven Software Development [M-INFO-101579]**

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
6

Recurrence
Each summer term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-103029	Practical Course Model-Driven Software Development	6 CR	Reussner

M**5.170 Module: Practical Course on Network Security Research [M-INFO-105413]**

Responsible: Mario Hock
Prof. Dr. Martina Zitterbart

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
3

Recurrence
Irregular

Language
German

Level
4

Version
1

Mandatory			
T-INFO-110938	Practical Course on Network Security Research	3 CR	Hock, Zitterbart

M

5.171 Module: Practical Course Protocol Engineering [M-INFO-102092]

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

Credits
4

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-104386	Practical Course Protocol Engineering	4 CR	Zitterbart

M**5.172 Module: Practical Course Research Project: Hands-on Anthropomatics [M-INFO-102568]**

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

Credits
8

Recurrence
Each term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-105278	Practical Course Research Project: Hands-on Anthropomatics	8 CR	Hanebeck

M**5.173 Module: Practical Course Software Defined Networking [M-INFO-101891]**

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

Credits
6

Recurrence
Each summer term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-103587	Practical Course Software Defined Networking	6 CR	Zitterbart

M

5.174 Module: Practical Course: Analysis of Complex Data Sets [M-INFO-102807]

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

Credits
4

Recurrence
Irregular

Language
English

Level
4

Version
1

Mandatory			
T-INFO-105796	Practical Course: Analysis of Complex Data Sets	4 CR	Böhm



5.175 Module: Practical Course: Analyzing Big Data [M-INFO-101663]

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

Credits
6

Recurrence
Each summer term

Language
German

Level
4

Version
2

Mandatory			
T-INFO-103202	Analyzing Big Data - Laboratory Course	6 CR	Böhm



5.176 Module: Practical Course: Database Systems [M-INFO-101662]

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

Credits
4

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-103201	Practical Course: Database Systems	4 CR	Böhm

M**5.177 Module: Practical Course: Digital Design & Test Automation Flow [M-INFO-102570]****Responsible:** Prof. Dr. Mehdi Baradaran Tahoori**Organisation:** KIT Department of Informatics**Part of:** [Informatics](#)**Credits**
3**Recurrence**
Each winter term**Language**
English**Level**
4**Version**
1

Mandatory			
T-INFO-105565	Practical Course Digital Design & Test Automation Flow	3 CR	Tahoori

M**5.178 Module: Practical Course: Discrete Freeform Surfaces [M-INFO-101667]**

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
6

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-103208	Practical Course: Discrete Freeform Surfaces	6 CR	Prautzsch

M**5.179 Module: Practical Course: General-Purpose Computation on Graphics Processing Units [M-INFO-100724]****Responsible:** Prof. Dr.-Ing. Carsten Dachsbacher**Organisation:** KIT Department of Informatics**Part of:** [Informatics](#)**Credits**
3**Recurrence**
Each term**Duration**
1 term**Language**
German**Level**
4**Version**
2

Mandatory			
T-INFO-109914	Practical Course: General-Purpose Computation on Graphics Processing Units	3 CR	



5.180 Module: Practical Course: Geometric Modeling [M-INFO-101666]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-103207	Practical Course: Geometric Modeling	3 CR	Prautzsch

M**5.181 Module: Practical Course: Hot Research Topics in Computer Graphics [M-INFO-104699]****Responsible:** Prof. Dr.-Ing. Carsten Dachsbacher**Organisation:** KIT Department of Informatics**Part of:** [Informatics](#)**Credits**
6**Recurrence**
Irregular**Language**
German/English**Level**
4**Version**
1

Mandatory			
T-INFO-109577	Practical Course: Hot Research Topics in Computer Graphics	6 CR	Dachsbacher

Competence Goal

Students study scientific publications on currently hot topics of computer graphics, implement and evaluate state of the art methods, and compare them to newly developed approaches. The results of the practical course will be documented in the form of a scientific paper.

Content

Students in this practical course are introduced to theoretical and practical aspects of current research topics at the chair of computer graphics.

M**5.182 Module: Practical Course: Implementation and Evaluation of Advanced Data
Mining Approaches for Semi-Structured Data [M-INFO-103128]**

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

Credits
 4

Recurrence
 Irregular

Language
 English

Level
 4

Version
 1

Mandatory			
T-INFO-106219	Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data	4 CR	Böhm

M**5.183 Module: Practical Course: Neural Network Exercises [M-INFO-103143]**

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each winter term

Language
German/English

Level
4

Version
1

Mandatory			
T-INFO-106259	Practical Course: Neural Network Exercises	3 CR	Waibel

M

5.184 Module: Practical Course: Programme Verification [M-INFO-101537]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Irregular

Language
German/English

Level
4

Version
1

Mandatory			
T-INFO-102953	Practical Course: Programme Verification	3 CR	Beckert



5.185 Module: Practical Course: Smart Data Analytics [M-INFO-103235]

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

Credits
6

Recurrence
Each summer term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-106426	Practical Course: Smart Data Analytics	6 CR	Beigl

M**5.186 Module: Practical Course: Virtual Neurorobotics in the Human Brain Project [M-INFO-103227]****Responsible:** Prof. Dr.-Ing. Rüdiger Dillmann**Organisation:** KIT Department of Informatics**Part of:** [Informatics](#)**Credits**
3**Recurrence**
Irregular**Language**
German/English**Level**
4**Version**
1**Mandatory**

T-INFO-106417	Practical Course: Virtual Neurorobotics in the Human Brain Project	3 CR	Dillmann
---------------	--	------	----------

Competence Goal

- Students understand the basic of neuroscience, neuro-robotics and neuro-informatics
- Students are able to model functional networks of artificial spiking neurons for robot control.
- They are familiar with neural and physical simulation environments (especially the simulator developed in the Human Brain Project) and can design and conduct scientific experiments within.

Content

In this practical course, students have the opportunity to discover the field of neurorobotics within the context of the “Human Brain Project”. The course will cover the concepts of virtual neurorobotics ranging from modelling networks of artificial spiking neurons to design of adequate experiments for training and evaluation in a simulation environments.



5.187 Module: Practical Course: Visual Computing 2 [M-INFO-101567]

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
6

Recurrence
Each term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-103000	Practical Course: Visual Computing 2	6 CR	Dachsbacher

M**5.188 Module: Practical Course: Web Applications and Service-Oriented Architectures (II) [M-INFO-101635]**

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each summer term

Language
German

Level
4

Version
2

Mandatory			
T-INFO-103121	Practical Course: Web Applications and Service-Oriented Architectures (II)	5 CR	Abeck

M

5.189 Module: Practical Introduction to Hardware Security [M-INFO-104357]**Responsible:** Prof. Dr. Mehdi Baradaran Tahoori**Organisation:** KIT Department of Informatics**Part of:** [Informatics](#)**Credits**
6**Recurrence**
Each winter term**Language**
English**Level**
4**Version**
1

Mandatory			
T-INFO-108920	Practical Introduction to Hardware Security	6 CR	Tahoori

M**5.190 Module: Practical Project Robotics and Automation I (Software) [M-INFO-102224]**

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

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
6

Recurrence
Each term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-104545	Practical Project Robotics and Automation I (Software)	6 CR	Hein, Längle

M**5.191 Module: Practical Project Robotics and Automation II (Hardware) [M-INFO-102230]**

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

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
6

Recurrence
Each term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-104552	Practical Project Robotics and Automation II (Hardware)	6 CR	Hein, Längle

M

5.192 Module: Practical SAT Solving [M-INFO-102825]

Responsible: Prof. Dr. Carsten Sinz
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Irregular

Language
German

Level
4

Version
1

Mandatory			
T-INFO-105798	Practical SAT Solving	5 CR	Sinz

M**5.193 Module: Practical: Course Engineering Approaches to Software Development [M-INFO-104254]**

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
6

Recurrence
Each term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-108791	Practical Course Engineering Approaches to Software Development	6 CR	Reussner

M**5.194 Module: Praktikum: Graphics and Game Development [M-INFO-105384]****Responsible:** Prof. Dr.-Ing. Carsten Dachsbacher**Organisation:** KIT Department of Informatics**Part of:** [Informatics](#)**Credits**
6**Recurrence**
Irregular**Language**
German/English**Level**
4**Version**
1

Mandatory			
T-INFO-110872	Praktikum: Graphics and Game Development	6 CR	Dachsbacher

M

5.195 Module: Principles of Automatic Speech Recognition [M-INFO-100847]

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
6

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101384	Principles of Automatic Speech Recognition	6 CR	Waibel

M**5.196 Module: Private Business Law [M-INFO-101216]**

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
3

Election block: Private Business Law (at least 1 item as well as at least 9 credits)			
T-INFO-101329	Employment Law I	3 CR	Hoff
T-INFO-101330	Employment Law II	3 CR	Hoff
T-INFO-101315	Tax Law I	3 CR	Dietrich
T-INFO-101314	Tax Law II	3 CR	Dietrich
T-INFO-101316	Law of Contracts	3 CR	Hoff

Competence Goal

The student

- has gained in-depth knowledge of German company law, commercial law and civil law;
- is able to analyze, evaluate and solve complex legal and economic relations and problems;
- is well grounded in individual labour law, collective labour law and commercial constitutional law, evaluates and critically assesses clauses in labour contracts;
- recognizes the significance of the parties to collective labour agreements within the economic system and has differentiated knowledge of labour disputes law and the law governing the supply of temporary workers and of social law;
- possesses detailed knowledge of national earnings and corporate tax law and is able to deal with provisions of tax law in a scientific manner and assesses the effect of these provisions on corporate decision-making.

Prerequisites

None

Content

The module provides the student with knowledge in special matters in business law, like employment law, tax law and business law, which are essential for managerial decisions.

M

5.197 Module: Project Lab: Image Analysis and Fusion [M-INFO-102383]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
6

Recurrence
Each summer term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-104746	Project Lab: Image Analysis and Fusion	6 CR	Beyerer

M**5.198 Module: Public Business Law [M-INFO-101217]**

Responsible: Dr. Tristan Barczak
Organisation: KIT Department of Informatics
Part of: Law

Credits
9

Recurrence
Each term

Duration
1 semester

Language
German

Level
4

Version
3

Election block: Public Business Law (at least 1 item as well as at least 9 credits)			
T-INFO-101309	Telecommunications Law	3 CR	Hermstrüwer
T-INFO-101303	Data Protection Law	3 CR	Eichenhofer
T-INFO-101311	Public Media Law	3 CR	Dreier
T-INFO-101312	European and International Law	3 CR	Brühann
T-INFO-101348	Environmental Law	3 CR	Eichenhofer

Competence Certificate
 see course description.

M

5.199 Module: Randomized Algorithms [M-INFO-100794]

Responsible: Thomas Worsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101331	Randomized Algorithms	5 CR	Worsch



5.200 Module: Rationale Splines [M-INFO-101853]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
5

Recurrence
Irregular

Language
German

Level
4

Version
1

Mandatory			
T-INFO-103543	Rationale Splines	5 CR	Prautzsch

Prerequisites
 one



5.201 Module: Rationale Splines [M-INFO-101857]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Irregular

Language
German

Level
4

Version
1

Mandatory			
T-INFO-103544	Rationale Splines	3 CR	Prautzsch

M

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

Responsible: Prof. Dr.-Ing. Thomas Längle
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
6

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

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

M

5.203 Module: Reconfigurable and Adaptive Systems [M-INFO-100721]

Responsible: Prof. Dr.-Ing. Jörg Henkel
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101258	Reconfigurable and Adaptive Systems	3 CR	Henkel

M

5.204 Module: Reinforcement Learning and Neural Networks in Robotics [M-INFO-104894]

Responsible: Prof. Dr.-Ing. Torsten Kröger
Dr.-Ing. Pascal Meißner

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Language
English

Level
4

Version
1

Mandatory			
T-INFO-109928	Reinforcement Learning and Neural Networks in Robotics	3 CR	Meißner

Competence Goal

You will get familiar with state-of-the-art data-driven representations and algorithms for controlling stationary and mobile robots. The first part covers basic concepts of Supervised and Imitation Learning of Deep Neural Networks by means of optimization techniques. In doing so, we dedicate an entire lecture to the practical application of networks in robotics. The second part expands on various approaches to Reinforcement Learning. Accompanying the lecture, we discuss case-studies from Robotics research.

Course objectives:

- Successful participants will have a basic understanding of Machine Learning and of the mathematical optimization techniques (gradient-based methods), used in this context.
- Successful participants will understand representations (Feed-Forward and Recurrent Networks) and algorithms (Back-propagation) in Deep Supervised and Imitation Learning. They will be able to deploy them on problems which are related to learning robot behaviors.
- Successful participants will gain a comprehensive insight in the terminology of Reinforcement Learning, its stochastic foundations (MDP), model-free learning methods (MC, TD, SARSA, Q-), policy-gradient approaches (Actor-Critic, TRPO, PPO) and model-based approaches (global and local models). On that basis, successful participants can develop solutions to learn robot motor skills.

Content

- Introduction and Foundations of Machine Learning
- Optimization for Machine Learning
- (Deep) Supervised Learning Introduction
- Guest Lecture - Innovative Practical Applications
- (Deep) Imitation Learning Introduction
- (Deep) Reinforcement Learning Introduction
- Markov Decision Processes and Dynamic Programming
- Monte-Carlo Learning and Time Difference
- Basic Policy Gradients
- Advanced Policy Gradients
- Model-based Reinforcement Learning

M

5.205 Module: Reliable Computing I [M-INFO-100850]

Responsible: Prof. Dr. Mehdi Baradaran Tahoori

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
3

Recurrence
Each winter term

Duration
1 term

Language
English

Level
4

Version
1

Mandatory			
T-INFO-101387	Reliable Computing I	3 CR	Tahoori

M

5.206 Module: Requirements Engineering [M-INFO-100763]

Responsible: Prof. Dr.-Ing. Anne Koziolk
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Duration
1 term

Language
English

Level
4

Version
1

Mandatory			
T-INFO-101300	Requirements Engineering	3 CR	Koziolk

M**5.207 Module: Research Project (Project, 1st Semester) [M-INFO-105037]**

Responsible: Prof. Dr. Bernhard Beckert
 Prof. Dr.-Ing. Michael Beigl
 Prof. Dr. Ralf Reussner

Organisation: KIT Department of Informatics

Part of: Informatics

Credits
10

Recurrence
Each term

Language
German

Level
4

Version
2

Mandatory			
T-INFO-110218	Research Project (Project, 1st Semester) - Oral Exam	3 CR	Beckert
T-INFO-110219	Research Project (Project, 1st Semester) - Presentation	3 CR	Beckert
T-INFO-110220	Research Project (Project, 1st Semester) - Project Proposal	4 CR	Beckert

M**5.208 Module: Research Project (Project, 2nd Semester) [M-INFO-105038]**

Responsible: Prof. Dr. Bernhard Beckert
 Prof. Dr.-Ing. Michael Beigl
 Prof. Dr. Ralf Reussner

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
10

Recurrence
Each term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-110221	Research Project (Project, 2nd Semester) - Oral Exam	3 CR	Beckert
T-INFO-110222	Research Project (Project, 2nd Semester) - Presentation	3 CR	Beckert
T-INFO-110223	Research Project (Project, 2nd Semester) - Scientific Report	4 CR	Beckert

M**5.209 Module: Robotics - Practical Course [M-INFO-102522]**

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

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

Mandatory			
T-INFO-105107	Robotics - Practical Course	6 CR	Asfour

Competence Goal

The student knows concrete solutions for different problems in robotics. He/she uses methods of inverse kinematics, grasp and motion planning, and visual perception. The student can implement solutions in the programming language C++ with the help of suitable software frameworks.

Content

The practical course is offered as an accompanying course to the lectures Robotics I-III. Every week, a small team of students will work on solving a given robotics problem. The list of topics includes robot modeling and simulation, inverse kinematics, robot programming via statecharts, collision-free motion planning, grasp planning, and robot vision.

Recommendation

Attending the lectures Robotics I – Introduction to Robotics, Robotics II: Humanoid Robotics, Robotics III - Sensors and Perception in Robotics and Mechano-Informatics and Robotics is recommended.

M

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

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

Credits
6

Recurrence
Each winter term

Language
German

Level
4

Version
3

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

M

5.211 Module: Robotics II: Humanoid Robotics [M-INFO-102756]

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

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

Mandatory			
T-INFO-105723	Robotics II: Humanoid Robotics	3 CR	Asfour

Competence Goal

The students have an overview of current research topics in autonomous learning robot systems using the example of humanoid robotics. They are able to classify and evaluate current developments in the field of cognitive humanoid robotics.

The students know the essential problems of humanoid robotics and are able to develop solutions on the basis of existing research.

Prerequisites

None

Content

The lecture presents current work in the field of humanoid robotics that deals with the implementation of complex sensorimotor and cognitive abilities. In the individual topics different methods and algorithms, their advantages and disadvantages, as well as the current state of research are discussed.

The topics addressed are: Applications and real world examples of humanoid robots; biomechanical models of the human body, biologically inspired and data-driven methods of grasping, active perception, imitation learning and programming by demonstration; semantic representations of sensorimotor experience as well as cognitive software architectures of humanoid robots.

M

5.212 Module: Robotics III - Sensors and Perception in Robotics [M-INFO-104897]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: Informatics

Credits
3

Recurrence
Each summer term

Duration
1 term

Language
German/English

Level
4

Version
1

Mandatory			
T-INFO-109931	Robotics III - Sensors and Perception in Robotics	3 CR	Asfour

Competence Goal

Students can name the main sensor principles used in robotics.

Students can explain the data flow from physical measurement through digitization to the use of the recorded data for feature extraction, state estimation and semantic scene understanding.

Students are able to propose and justify suitable sensor concepts for common tasks in robotics.

Content

The lecture supplements the lecture Robotics I with a broad overview of sensors used in robotics. The lecture focuses on visual perception, object recognition, simultaneous localization and mapping (SLAM) and semantic scene interpretation. The lecture is divided into two parts:

In the first part a comprehensive overview of current sensor technologies is given. A basic distinction is made between sensors for the perception of the environment (exteroceptive) and sensors for the perception of the internal state (proprioceptive).

The second part of the lecture concentrates on the use of exteroceptive sensors in robotics. The topics covered include tactile exploration and visual data processing, including advanced topics such as feature extraction, object localization, simultaneous localization and mapping (SLAM) and semantic scene interpretation.

M

5.213 Module: Security [M-INFO-100834]

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

Credits
6

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

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

M**5.214 Module: Seminar Information Systems [M-WIWI-104815]**

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

Organisation: KIT Department of Economics and Management

Part of: [Seminars](#)

Credits
3

Recurrence
Each term

Language
German

Level
1

Version
1

Mandatory			
T-WIWI-109827	Seminar in Information Systems (Master)	3 CR	Studiendekan der KIT-Fakultät für Informatik, Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

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.



5.215 Module: Seminar Module Economic Sciences [M-WIWI-102736]

Responsible: Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

Organisation: KIT Department of Economics and Management

Part of: [Seminars](#)

Credits	Language	Level	Version
3	German	1	1

Election block: Compulsory Elective Courses (1 item)			
T-WIWI-103474	Seminar in Business Administration A (Master)	3 CR	Professorenschaft des Fachbereichs Betriebswirtschaftslehre
T-WIWI-103478	Seminar in Economics A (Master)	3 CR	Professorenschaft des Fachbereichs Volkswirtschaftslehre
T-WIWI-103481	Seminar in Operations Research A (Master)	3 CR	Nickel, Rebennack, Stein
T-WIWI-103483	Seminar in Statistics A (Master)	3 CR	Grothe, Schienle

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**5.216 Module: Seminar Module Informatics [M-INFO-102822]**

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

Part of: [Seminars](#)

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

Election block: Compulsory Elective Seminar in Informatics (1 item)			
T-INFO-104336	Seminar Informatics A	3 CR	Abeck
T-WIWI-103480	Seminar in Informatics B (Master)	3 CR	Professorenschaft des Fachbereichs Informatik

M

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

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

Credits
3

Recurrence
Each term

Duration
1 semester

Language
German

Level
1

Version
1

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

M**5.218 Module: Service Analytics [M-WIWI-101506]**

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

Organisation: KIT Department of Economics and Management

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
6

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-108715	Artificial Intelligence in Service Systems	4,5 CR	Satzger
T-WIWI-105777	Business Intelligence Systems	4,5 CR	Mädche, Nadj, Toreini
T-WIWI-102899	Modeling and Analyzing Consumer Behavior with R	4,5 CR	Dorner, Weinhardt
T-WIWI-105778	Service Analytics A	4,5 CR	Fromm
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 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

Students

- knows the theoretical bases and the key components of Business Intelligence systems,
- acquires the basic skills to make use of business intelligence and analytics software in the service context
- are introduced into various application scenarios of analytics in the service context
- are able to distinguish different analytics methods and apply them in context
- learn how to apply analytics software in the service context
- are trained for the structured compilation and solution of practice relevant problems with the help of commercial business intelligence software packages as well as analytics methods and tools

Prerequisites

None

Content

The importance of services in modern economies is most evident – nearly 70% of gross value added are achieved in the tertiary sector and a growing number of industrial enterprises add customer specific services to their material goods or transform their business models fundamentally. The growing availability of data “Big Data” and their intelligent processing by applying analytic methods and business intelligence systems plays a key role.

It is the goal of the module to give students a comprehensive overview on the subject Business Intelligence & Analytics focusing on service issues. Various scenarios illustrate how the methods and systems introduced help to improve existing services or create innovative data-based services.

Recommendation

The course Service Analytics A [2595501] should be taken.

Annotation

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

Workload

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

M**5.219 Module: Service Design Thinking [M-WIWI-101503]**

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

Organisation: KIT Department of Economics and Management

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

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

Mandatory			
T-WIWI-102849	Service Design Thinking	12 CR	Satzger

Competence Certificate

The assessment is carried out as a general exam (according to Section 4(2), 3 of the examination regulation). The overall grade of the module is the grade of the examination (according to Section 4(2), 3 of the examination regulation).

Competence Goal

- Deep knowledge of the innovation method Design Thinking, as introduced and promoted by Stanford University
- Development of new, creative solutions through extensive observation of oneself and one's environment, in particular with regard to the relevant service users
- Know how to use prototyping and experimentation to visualize one's ideas, to test and iteratively develop them, and to converge on a solution
- Learn to apply the method to a real innovation projects issued by industry partners.

Prerequisites

None

Content

- Paper Bike: Learning about the basic method elements by building a paper bike that has to fulfill a given set of challenges. The bikes will be tested in a race during an international Kick-Off event with other universities of the SUGAR network (intern. Design Thinking network).
- Design Space Exploration: Exploring the problem space through customer and user observation as well as desk research.
- Critical Function Prototype: Identification of critical features from the customer's perspective that can contribute to the solution of the overarching problem. Building and testing prototypes that integrate these functionalities.
- Dark Horse Prototype: Inverting earlier assumptions and experiences, which leads to the inclusion of new features and solutions. Developing radically new ideas are in the focus of this phase.
- Funky Prototype: Integration of the individually tested and successful functions to several complete solution scenarios, which are further tested and developed.
- Functional Prototype: Selection of successful scenarios from the previous phase and building a higher resolution prototype. The final solution to the challenge is laid out in detail and tested with users.
- Final Prototype: Implementing the functional prototype and presenting it to the customer.

Recommendation

This course is held in English – proficiency in writing and communication is required.

Our past students recommend to take this course at the beginning of the masters program.

Annotation

Due to practical project work as a component of the program, access is limited.

The module (as well as the module component) spans two semesters. It starts in September every year and runs until end of June in the subsequent year. Entering the program is only possible at its beginning - after prior application in May/June.

For more information on the application process and the program itself are provided in the module component description and the program's website (<http://sdt-karlsruhe.de>).

Furthermore, the KSRI conducts an information event for applicants every year in May.

This module is part of the KSRI Teaching Program „Digital Service Systems“. For more information see the KSRI Teaching website: www.ksri.kit.edu/teaching.

Workload

The total amount of work for this module is approx. 270 hours (9 credits). The workload for this course is comparably high as the course runs in cooperation with partner universities from around the world as well as partner companies. This causes overhead.

M**5.220 Module: Service Economics and Management [M-WIWI-102754]**

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

Organisation: KIT Department of Economics and Management

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
4

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-110280	Digital Services: Business Models and Transformation	4,5 CR	Satzger
T-WIWI-102640	Market Engineering: Information in Institutions	4,5 CR	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 the scientific basics of the management of digital services and corresponding systems
- gain a comprehensive insight in the importance and the most important features of information systems as an central component of the digitalization of business processes, products and services
- know the most relevant concepts and theories to shape the digital transformation process of service systems successfully
- understand the OR methods in the sector of service management and apply them adequately
- are able to use large amounts of available data systematically for the planning, operation and improvement of complex service offers and to design and control information systems
- are able to develop market-oriented coordination mechanisms and apply service systems.

Prerequisites

None

Content

This module provides the foundation for the management of digital services and corresponding systems. The courses in this module cover the major concepts for a successful management of service systems and their digital transformation. Current examples from the research and practice enhance the relevance of the discussed topics.

Recommendation

None

Annotation

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

Workload

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

M**5.221 Module: Service Innovation, Design & Engineering [M-WIWI-102806]**

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

Organisation: KIT Department of Economics and Management

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
3

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-110877	Engineering Interactive Systems	4,5 CR	
T-WIWI-102639	Business Models in the Internet: Planning and Implementation	4,5 CR	Weinhardt
T-WIWI-110887	Practical Seminar: Service Innovation	4,5 CR	Satzger
T-WIWI-108437	Practical Seminar: Information Systems and Service Design	4,5 CR	Mädche
T-WIWI-102641	Service Innovation	4,5 CR	Satzger

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

- know about the challenges, concepts, methods and tools of service innovation management and are able to use them successfully.
- have a profound comprehension of the development and design of innovative services and are able to apply suitable methods and tools on concrete and specific issues.
- are able to embed the concepts of innovation management, development and design of services into organisations
- are aware of the strategic importance of services, are able to present value creation in the context of services systems and to strategically exploit the possibilities of their digital transformation
- elaborate concrete and problem-solving solutions for practical tasks in teams.

Prerequisites**Dependencies between courses:**

The course Practical Seminar Service Innovation cannot be applied in combination with the course Practical Seminar Digital Service Design.

Content

This module is designed to constitute the basis for the development of successful ICT supported innovations thus including the methods and tools for innovation management, for the design and the development of digital services and the implementation of new business models. Current examples from science and practice enhance the relevance of the topics addressed.

Recommendation

Attending the course Practical Seminar Service Innovation [2595477] is recommended in combination with the course Service Innovation [2595468].

Attending the course Practical Seminar Digital Service Design [new] is recommended in combination with the course Digital Service Design [new].

Annotation

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

Workload

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

M

5.222 Module: Service Management [M-WIWI-101448]

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

Organisation: KIT Department of Economics and Management

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

Credits	Recurrence	Language	Level	Version
9	Each term	German/English	4	6

Mandatory			
T-WIWI-110280	Digital Services: Business Models and Transformation	4,5 CR	Satzger
Election block: Supplementary Courses (4,5 credits)			
T-WIWI-108715	Artificial Intelligence in Service Systems	4,5 CR	Satzger
T-WIWI-102899	Modeling and Analyzing Consumer Behavior with R	4,5 CR	Dorner, Weinhardt
T-WIWI-105778	Service Analytics A	4,5 CR	Fromm
T-WIWI-102641	Service Innovation	4,5 CR	Satzger

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

- understand the basics of developing and managing IT-based services,
- understand and apply OR methods in service management,
- systematically use vast amounts of available data for planning, operation, personalization and improvement of complex service offerings, and
- understand and analyze innovation processes in corporations.

Prerequisites

The course "Digital Services: Business Models and Transformation" is compulsory and must be examined.

Content

The module service management addresses the basics of developing and managing IT-based services. The lectures contained in this module teach the basics of developing and managing IT-based services and the application of OR methods in the field of service management. Moreover, students learn to systematically analyze vast amounts of data for planning, operation and improvement for complex service offerings. These tools enhance operational and strategic decision support and help to analyze and understand the overall innovation processes in corporations. Current examples from research and industry demonstrate the relevance of the topics discussed in this module.

Recommendation

None

Workload

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

M

5.223 Module: Service Operations [M-WIWI-102805]

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

Credits
9

Recurrence
Each term

Language
German

Level
4

Version
6

Election block: Compulsory Elective Courses (at most 2 items)			
T-WIWI-102718	Discrete-Event Simulation in Production and Logistics	4,5 CR	Nickel
T-WIWI-102884	Operations Research in Health Care Management	4,5 CR	Nickel
T-WIWI-102715	Operations Research in Supply Chain Management	4,5 CR	Nickel
T-WIWI-102716	Practical Seminar: Health Care Management (with Case Studies)	4,5 CR	Nickel
Election block: Supplementary Courses (at most 2 items)			
T-WIWI-102872	Challenges in Supply Chain Management	4,5 CR	Mohr
T-WIWI-110971	Demand-Driven Supply Chain Planning	4,5 CR	Packowski

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

- knows the theoretical bases and the key components of Business Intelligence systems,
- acquires the basic skills to make use of business intelligence and analytics software in the service context
- are introduced into various application scenarios of analytics in the service context
- are able to distinguish different analytics methods and apply them in context
- learn how to apply analytics software in the service context
- are trained for the structured compilation and solution of practice relevant problems with the help of commercial business intelligence software packages as well as analytics methods and tools

Prerequisites

At least one of the four courses Operations Research in Supply Chain Management, Operations Research in Health Care Management, Practical seminar: Health Care Management or Discrete-Event Simulation in Production and Logistics has to be assigned.

Content

The importance of services in modern economies is most evident – nearly 70% of gross value added are achieved in the tertiary sector and a growing number of industrial enterprises add customer specific services to their material goods or transform their business models fundamentally. The growing availability of data “Big Data” and their intelligent processing by applying analytic methods and business intelligence systems plays a key role.

It is the goal of the module to give students a comprehensive overview on the subject Business Intelligence & Analytics focusing on service issues. Various scenarios illustrate how the methods and systems introduced help to improve existing services or create innovative data-based services.

Recommendation

The course Practical Seminar Health Care should be combined with the course OR in Health Care Management.

Annotation

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

Workload

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



5.224 Module: Signals and Codes [M-INFO-100823]

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

Credits
3

Recurrence
Irregular

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101360	Signals and Codes	3 CR	Müller-Quade

M

5.225 Module: Software Architecture and Quality [M-INFO-100844]

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101381	Software Architecture and Quality	3 CR	Reussner

M**5.226 Module: Software Development for Modern, Parallel Platforms [M-INFO-100802]**

Responsible: Prof. Dr. Walter Tichy
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101339	Software Development for Modern, Parallel Platforms	3 CR	Tichy

M**5.227 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](#)

Credits
6

Recurrence
Each winter term

Duration
1 semester

Language
German

Level
4

Version
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

5.228 Module: Software Lab Parallel Numerics [M-INFO-102998]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
6

Recurrence
Each term

Language
German/English

Level
4

Version
2

Mandatory			
T-INFO-105988	Software Lab Parallel Numerics	6 CR	Karl

M**5.229 Module: Software Product Line Engineering [M-INFO-105471]**

Responsible: Dr. Thomas Kühn
Prof. Dr. Ralf Reussner

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
3

Recurrence
Each winter term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-111017	Software Product Line Engineering	3 CR	Kühn, Reussner

M

5.230 Module: Software-Evolution [M-INFO-100719]

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits	Recurrence	Duration	Level	Version
3	Each winter term	1 term	4	1

Mandatory			
T-INFO-101256	Software-Evolution	3 CR	Reussner

Prerequisites

None

M

5.231 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 \(Economics\)](#)
[Economics and Management \(Statistics\)](#)

Credits
9Recurrence
Each termLanguage
GermanLevel
4Version
1

Election block: Compulsory Elective Courses ()			
T-WIWI-103063	Analysis of Multivariate Data	4,5 CR	Grothe
T-WIWI-103066	Data Mining and Applications	4,5 CR	Nakhaeizadeh
T-WIWI-103064	Financial Econometrics	4,5 CR	Schienle
T-WIWI-110939	Financial Econometrics II	4,5 CR	Schienle
T-WIWI-103065	Statistical Modeling of Generalized Regression Models	4,5 CR	Heller

Competence Certificate

The assessment is carried out as partial 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

5.232 Module: Stochastic Information Processing [M-INFO-100829]

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

Credits
6

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101366	Stochastic Information Processing	6 CR	Hanebeck

M

5.233 Module: Stochastic Optimization [M-WIWI-103289]

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

Credits
9

Recurrence
Each term

Duration
1 semester

Language
German/English

Level
4

Version
9

Election block: Compulsory Elective Courses (between 1 and 2 items)			
T-WIWI-106546	Introduction to Stochastic Optimization	4,5 CR	Rebennack
T-WIWI-106548	Advanced Stochastic Optimization	4,5 CR	Rebennack
T-WIWI-106549	Large-scale Optimization	4,5 CR	Rebennack
Election block: Supplementary Courses (at most 1 item)			
T-WIWI-102723	Graph Theory and Advanced Location Models	4,5 CR	Nickel
T-WIWI-102719	Mixed Integer Programming I	4,5 CR	Stein
T-WIWI-102720	Mixed Integer Programming II	4,5 CR	Stein
T-WIWI-103124	Multivariate Statistical Methods	4,5 CR	Grothe
T-WIWI-102715	Operations Research in Supply Chain Management	4,5 CR	Nickel
T-WIWI-106545	Optimization under Uncertainty	4,5 CR	Rebennack
T-WIWI-110162	Optimization Models and Applications	4,5 CR	Sudermann-Merx

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

- names and describes basic notions for advanced stochastic optimization methods, in particular, ways to algorithmically exploit the special model structures,
- knows the indispensable methods and models for quantitative analysis of stochastic optimization problems,
- models and classifies stochastic optimization problems and chooses the appropriate solution methods to solve also challenging stochastic optimization problems independently and, if necessary, with the aid of a computer,
- validates, illustrates and interprets the obtained solutions,
- identifies drawbacks of the solution methods and, if necessary, is able to make suggestions to adapt them to practical problems.

Prerequisites

At least one of the courses "Advanced Stochastic Optimization", "Large-scale Optimization" or "Introduction to Stochastic Optimization" has to be taken.

Content

The module focuses on the modeling as well as the imparting of theoretical principles and solution methods for optimization problems with special structure, which occur for example in the stochastic optimization.

Recommendation

It is recommended to listen to the lecture "Introduction to Stochastic Optimization" before the lecture "Advanced Stochastic Optimization" is visited.

Annotation

The course "Introduction to Stochastic Optimization" will be offered until the winter semester 2020/21 as an additional option in the elective offer of the module. Thereafter, the course can only be selected in the supplementary offer.

The courses are sometimes offered irregularly. 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 for this module is approximately 270 hours (9 credits). The allocation is made according to the credit points of the courses of the module. The total number of hours per course is determined by the amount of time spent attending the lectures and exercises, as well as the exam times and the time required to achieve the module's learning objectives for an average student for an average performance.



5.234 Module: Subdivision Algorithms [M-INFO-101864]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

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

Mandatory			
T-INFO-103550	Subdivision Algorithms	5 CR	Prautzsch

Prerequisites

None

M

5.235 Module: Subdivision Algorithms [M-INFO-101863]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-103551	Subdivision Algorithms	3 CR	Prautzsch



5.236 Module: Symmetric Encryption [M-INFO-100853]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: [Informatics](#) (Usage until 9/30/2022)

Credits
3

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101390	Symmetric Encryption	3 CR	Müller-Quade

M

5.237 Module: Telematics [M-INFO-100801]

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

Credits
6

Recurrence
Each winter term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101338	Telematics	6 CR	Zitterbart

M

5.238 Module: Testing Digital Systems I [M-INFO-100851]

Responsible: Prof. Dr. Mehdi Baradaran Tahoori

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Duration
1 term

Language
English

Level
4

Version
1

Mandatory			
T-INFO-101388	Testing Digital Systems I	3 CR	Tahoori

M

5.239 Module: Testing Digital Systems II [M-INFO-102962]

Responsible: Prof. Dr. Mehdi Baradaran Tahoori

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
3

Recurrence
Each summer term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-105936	Testing Digital Systems II	3 CR	Tahoori

M

5.240 Module: Transport Infrastructure Policy and Regional Development [M-WIWI-101485]

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

Credits
9

Recurrence
Each term

Duration
2 semester

Language
German/English

Level
4

Version
2

Election block: Compulsory Elective Courses (2 items)			
T-WIWI-103107	Spatial Economics	4,5 CR	Ott
T-WIWI-100007	Transport Economics	4,5 CR	Mitusch, Szimba

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 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

The students

- understand the economic issues related to transport and regional development with a main focus on economic policy issues generated by the relationship of transport and regional development with the public sector
- are able to compare different considerations of politics, regulation and the private sector and to analyse and assess the respective decision problems both qualitatively and by applying appropriate methods from economic theory
- are prepared for careers in the public sector, particularly for public companies, politics, regulatory agencies, related consultancies, mayor construction companies or infrastructure project corporations

Prerequisites

None

Content

The development infrastructure (e.g. transport, energy, telecommunications) has always been one of the most relevant factors for economic development and particularly influences the development of the regional economy. From the repertoire of state actions, investments into transport infrastructure are often regarded the most important measure to foster regional economic growth. Besides the direct effects of transport policy on passenger and freight transport, a variety of individual economic activities is significantly dependent on the available or potential transport options. Decisions on the planning, financing and realization of mayor infrastructure projects require a solid and far-reaching consideration of direct and indirect growth effects with the occurring costs.

Through its combination of lectures the module reflects the complex interdependencies between infrastructure policy, transport industry and regional policy and provides its participants with a comprehensive understanding of the functionalities of one of the most important sectors of the economy and its relevance for economic policy.

Annotation

The courses *Assessment of Public Policies and Projects I* (winter term) and *Assessment of Public Policies and Projects II* (summer term) will no longer be part of this module. Student who have already had exams in this courses can integrate these exams in this module.

Workload

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

M

5.241 Module: Ubiquitous Computing [M-WIWI-101458]

Responsible: N.N.
Prof. Dr. Hartmut Schneck

Organisation: KIT Department of Economics and Management

Part of: [Informatics](#)

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

Mandatory			
T-INFO-101326	Ubiquitous Computing	5 CR	Beigl
Election block: Supplementary Courses (between 4 and 5 credits)			
T-WIWI-102761	Advanced Lab in Ubiquitous Computing	4 CR	Beigl, Schneck
T-INFO-101323	IT-Security Management for Networked Systems	5 CR	Hartenstein

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

The student

- gets comprehensive knowledge about topics in the area of Ubiquitous Computing
- can design and evaluate ubiquitous systems in different application areas
- acquires appropriate knowledge for addressing specialized aspects in the area of ubiquitous computing

Prerequisites

See German version

Content

Ubiquitous information technology (Ubiquitous Computing) addresses the ubiquitous (or pervasive) availability of information processing. The availability of these systems has the objective to facilitate the operational environment in technical scenarios or in daily life of humans and to enrich it with new capabilities. This module provides fundamentals of ubiquitous computing and further topics like network and Internet technologies, security aspects, the analysis of autonomously operating systems in Organic Computing and also the utilisation of information and communication technologies in highly decentralized energy systems.

Workload

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

M

5.242 Module: Ubiquitous Computing [M-INFO-100789]

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

Credits
5

Recurrence
Each winter term

Duration
1 term

Language
German/English

Level
4

Version
1

Mandatory			
T-INFO-101326	Ubiquitous Computing	5 CR	Beigl

M

5.243 Module: Visualization [M-INFO-100738]

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

Credits
5

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101275	Visualization	5 CR	Dachsbacher

M

5.244 Module: Wearable Robotic Technologies [M-INFO-103294]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits	Recurrence	Language	Level	Version
4	Each summer term	German/English	4	2

Mandatory			
T-INFO-106557	Wearable Robotic Technologies	4 CR	Asfour, Beigl

Competence Goal

The students have received fundamental knowledge about wearable robotic technologies and understand the requirements for the design, the interface to the human body and the control of wearable robots. They are able to describe methods for modelling the human neuromusculoskeletal system, the mechatronic design, fabrication and composition of interfaces to the human body. The students understand the symbiotic human-machine interaction as a core topic of Anthropomatics and have knowledge of state of the art examples of exoskeletons, orthoses and prostheses.

Content

The lecture starts with an overview of wearable robot technologies (exoskeletons, prostheses and orthoses) and its potentials, followed by the basics of wearable robotics. In addition to different approaches to the design of wearable robots and their related actuator and sensor technology, the lecture focuses on modeling the neuromusculoskeletal system of the human body and the physical and cognitive human-robot interaction for tightly coupled hybrid human-robot systems. Examples of current research and various applications of lower, upper and full body exoskeletons as well as prostheses are presented.

M

5.245 Module: Web and Data Science [M-WIWI-105368]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: Informatics

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

Election block: Compulsory Elective Courses (at least 2 items)			
T-WIWI-102666	Knowledge Discovery	4,5 CR	Sure-Vetter
T-WIWI-103112	Web Science	4,5 CR	Sure-Vetter
T-WIWI-110548	Advanced Lab Informatics (Master)	4,5 CR	Professorenschaft des Fachbereichs Informatik

Competence Certificate

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

Competence Goal

The student

- know the basics of machine learning, data mining and knowledge discovery
- can design, train and evaluate systems that are capable of learning
- carry out knowledge discovery projects, taking into account algorithms, representations and applications.
- will look at current research topics in the field of Web Science and
- learn about the topics Small World Problem, Network Theory, Social Network Analysis, Bibliometrics, Link Analysis and Search,
- apply interdisciplinary thinking and
- apply technological approaches to social science problems.

Prerequisites

None

Content

The module focuses on machine learning and data mining methods for knowledge acquisition from large databases as well as web phenomena and the available technologies.

The lecture Knowledge Discovery gives an overview of approaches of machine learning and data mining for knowledge acquisition from large data sets. These are examined especially with respect to algorithms, applicability to different data representations and the use in real application scenarios.

Knowledge Discovery is an established research area with a large community that investigates methods for discovering patterns and regularities in large amounts of data, including unstructured text. A variety of methods exist to extract patterns and provide previously unknown insights. This information can be predictive or descriptive.

The lecture gives an overview of Knowledge Discovery. Specific techniques and methods, challenges and current and future research topics in this research area will be taught.

Contents of the lecture cover the entire machine learning and data mining process with topics on supervised and unsupervised learning and empirical evaluation. Covered learning methods range from classical approaches like decision trees, support vector machines and neural networks to selected approaches from current research. Learning problems considered include feature vector-based learning and text mining.

The lecture "Web Science" offers an insight into the analysis of social networks and the metrics used in this context. Thereby especially web phenomena and the available technologies.

Web Science is the emerging study of the people and technologies, applications, processes and practices that make the world Wide Web and are shaped and embossed. Web Science aims to develop theories, methods and findings from the entire academic disciplines and work with industry, business, politics and civil society to create an understanding of the Web: The largest socio-technical infrastructure in the history of mankind.

The lecture gives an introduction to the basic concepts of Web Science. Essential theoretical foundations, Phenomena and methods are presented and explained. This lecture aims to give students a basic knowledge and understanding of the structure and analysis of selected web phenomena and technologies. The topics include the small world problem, Network theory, social network analysis, graph-based search and technologies / standards / architectures.

Workload

The total workload for this module is approximately 270 hours.

M**5.246 Module: Web Applications and Service-Oriented Architectures (II) [M-INFO-100734]**

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: [Informatics](#)

Credits
4

Recurrence
Each summer term

Duration
1 term

Language
German

Level
4

Version
1

Mandatory			
T-INFO-101271	Web Applications and Service-Oriented Architectures (II)	4 CR	Abeck

Competence Certificate

Siehe Teilleistung

M

5.247 Module: Web Data Management [M-WIWI-101455]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: Informatics

Credits
9

Recurrence
Each term

Duration
1 semester

Language
German/English

Level
4

Version
4

Election block: Compulsory Elective Courses (2 items)			
T-WIWI-110848	Semantic Web Technologies	4,5 CR	Sure-Vetter
T-WIWI-103112	Web Science	4,5 CR	Sure-Vetter
T-WIWI-110548	Advanced Lab Informatics (Master)	4,5 CR	Professorenschaft des Fachbereichs Informatik

Competence Certificate

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

Competence Goal

Students

- develop ontologies for semantic web technologies und choose suitable representation languages,
- are able to provide data and applications via a cloud-based infrastructure
- transfer the methods and technologies of semantic web technologies and cloud computing to new application sectors,
- evaluate the potential of semantic web technologies and the cloud computing approaches for new application sectors.

Content

The module Web Data Management covers the basic principles, methods and applications for intelligent systems in the World Wide Web. Cloud Services are essential for the decentralized, scalable provision of data and applications as well as the methods of semantic web based on the description of data and services via metadata in form of so called ontologies.

Formal principles and practical aspects such as knowledge modeling and available representation language tools for ontologies are covered in detail. Methods for the realization of intelligent systems within the World Wide Web are treated and applications as in Web 2.0 or Service Science are discussed and evaluated.

Furthermore the application of modern Cloud technologies for the use of software and hardware as a service via internet is introduced. Cloud technologies allow the efficient implementation of applications on distributed computer clusters and permit a high scalability as well as new business models in the internet.

Workload

The total workload for this module is approximately 270 hours (9 credits). The allocation is based on the credits of the courses of the module. The workload for courses with 4.5 credits is about 135 hours.

The total number of hours per course results from the effort 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.

6 Courses

T

6.1 Course: A Closer Look at Social Innovation [T-WIWI-109932]

Responsible: Dr. Daniela Beyer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Irregular	1

Events					
SS 2020	2545105	Negotiating Open Innovation	2 SWS	Seminar (S)	Beyer

Competence Certificate

Non exam assessment (following §4(2) 3 of the examination regulation). The grade consists of an innovation plan (comparable to an exposé) (15%), a guideline interview (25%), a presentation of the results (20%) and a seminar paper (40%).

Prerequisites

None

Recommendation

The previous attendance of the lecture Innovation Management is recommended.

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

V

Negotiating Open Innovation

2545105, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content


In times of great challenges, it is no longer sufficient for individual experts to be responsible for innovation success. This is precisely why there is currently so much hype surrounding the topic of Open Innovation. The exchange of knowledge within and between organizations is crucial, but requires the right attitudes and decisions. This seminar examines how this can be achieved in the best possible way, depending on the objectives. By visiting two practitioners from science-economics cooperations and the company's own Startup Accelerator Programme, theory and practice are linked. Furthermore, a simulation game will take place in the last session, in which the learned will be applied. The grading is based on a group seminar work, which requires an empirical analysis and the preparation of this in the course of the semester (expose, preparation of the methodology) as well as well-informed participation.

T

6.2 Course: Access Control Systems Lab [T-INFO-108611]

Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: [M-INFO-104164 - Access Control Systems Lab](#)

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

Events					
SS 2020	2400094	Practical Course Access Control Systems	2 SWS	Practical course (P)	Jacob, Grashöfer, Grundmann, Hartenstein
WS 20/21	2400009	Practical Course Access Control Systems	2 SWS	Practical course (P) / 	Jacob, Grashöfer, Grundmann, Leinweber, Hartenstein
Exams					
SS 2020	7500095	Access Control Systems Lab		Prüfung (PR)	Hartenstein
WS 20/21	7500187	Access Control Systems Lab		Prüfung (PR)	Hartenstein

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

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

V

Practical Course Access Control Systems

2400094, SS 2020, 2 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)

Content

An information security model defines access rights that express for a given system which subjects are allowed to perform which actions on which objects. A system is said to be secure with respect to a given information security model, if it enforces the corresponding access rights. Thus, access control modeling and access control systems represent the fundamental building blocks of secure services, be it on the Web or in the Internet of Everything.

In this master-level course, we thoroughly investigate the evolution of access control models (access control matrix, role-based access control, attribute access control) and describe usage control models as a unified framework for both access control and digital rights management. The students experiment with real-world access control protocols and technologies and thus apply the contents of the lecture "Access Control Systems: Foundations and Practice" in a real-world context.

Amount of Work

Meeting with advisors: ca. 10h

Preparation and follow-up, completion of assignments: 110h

120h = 4 ECTS

Learning Objectives

The student is able to derive suitable access control models from scenario requirements and is able to specify concrete access control systems.

The student is aware of current access control frameworks and technologies.

The student is able to formulate a suitable system architecture for a given access control scenario.

The student is able to identify concrete technologies to implement an access control system securely and efficiently.

The student is able to evaluate the suitability of a given access control system architecture for a given scenario.

Organizational issues

Information on Online Teaching During the COVID-19 Pandemic

We plan to hold all meetings for this seminar synchronously via video conferencing at the scheduled dates on Friday, 2:00pm. We are currently in the process of selecting a proper tele-conferencing tool.

Information on the tele-conferencing tool and possible changes to these plans will be posted to the respective ILIAS course. Participants of this practical course will be added to the ILIAS course once the application period ends (26.04., 11:55pm).

**Practical Course Access Control Systems**2400009, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)**Practical course (P)**
Online**Content**

An information security model defines access rights that express for a given system which subjects are allowed to perform which actions on which objects. A system is said to be secure with respect to a given information security model, if it enforces the corresponding access rights. Thus, access control modeling and access control systems represent the fundamental building blocks of secure services, be it on the Web or in the Internet of Everything.

In this master-level course, we thoroughly investigate the evolution of access control models (access control matrix, role-based access control, attribute access control) and describe usage control models as a unified framework for both access control and digital rights management. The students experiment with real-world access control protocols and technologies and thus apply the contents of the lecture "Access Control Systems: Foundations and Practice" in a real-world context.

Amount of Work

Meeting with advisors: ca. 10h

Preparation and follow-up, completion of assignments: 110h

120h = 4 ECTS

Learning Objectives

The student is able to derive suitable access control models from scenario requirements and is able to specify concrete access control systems.

The student is aware of current access control frameworks and technologies.

The student is able to formulate a suitable system architecture for a given access control scenario.

The student is able to identify concrete technologies to implement an access control system securely and efficiently.

The student is able to evaluate the suitability of a given access control system architecture for a given scenario.

Organizational issues

We plan to hold the meetings for this lab course synchronously via video conferencing.

Please register for this lab course at <https://portal.wiwi.kit.edu/ys/3748>

T

6.3 Course: Access Control Systems: Foundations and Practice [T-INFO-106061]


Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: [M-INFO-103046 - Access Control Systems: Foundations and Practice](#)
[M-WIWI-104812 - Information Systems: Engineering and Transformation](#)




Type	Credits	Recurrence	Version
Written examination	4	Each term	1

Events					
SS 2020	2400111	Access Control Systems: Foundations and Practice	2 SWS	Lecture (V)	Hartenstein, Leinweber
Exams					
SS 2020	7500247	Access Control Systems: Foundations and Practice		Prüfung (PR)	Hartenstein

T

6.4 Course: Accessibility - Assistive Technologies for Visually Impaired Persons [T-INFO-101301]**Responsible:** Prof. Dr.-Ing. Rainer Stiefelhagen**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100764 - Accessibility - Assistive Technologies for Visually Impaired Persons](#)**Type**
Oral examination**Credits**
3**Recurrence**
Each summer term**Version**
1

Events					
SS 2020	2400052	Accessibility - Assistive Technologies for Visually Impaired Persons	2 SWS	Lecture (V)	Stiefelhagen, Schwarz
WS 20/21	2400109	Accessibility - Assistive Technologies for Visually Impaired Persons	2 SWS	Lecture (V) / 	Stiefelhagen, Schwarz
Exams					
SS 2020	7500007	Accessibility - Assistive Technologies for Visually Impaired Persons		Prüfung (PR)	Stiefelhagen
WS 20/21	7500038	Accessibility - Assistive Technologies for Visually Impaired Persons		Prüfung (PR)	Stiefelhagen

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

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

V

Accessibility - Assistive Technologies for Visually Impaired Persons2400052, SS 2020, 2 SWS, Language: German, [Open in study portal](#)**Lecture (V)****Content**

According to the World Health Organization there are 285 million visually impaired persons worldwide, of which 39 million are blind and 246 million have low vision. The partial or full loss of sight leads to a number of challenges that visually impaired persons have to face. These include difficulties in mobility and navigation in unknown terrain, missing information in social interaction or handling and finding of objects in daily life.

There are already several technical aids available to support blind and visually impaired persons. So digitized texts can be made accessible by sound output or Braille display. There are also various tools which are especially designed for blind persons such as 'speaking' clocks or pocket calculators. However, the most important technical aid by far to improve mobility is the white cane. Although a number of electronic aids to detect obstacles and to support orientation have been developed over the last years they only offer reduced functionality for a relatively high price and are therefore rarely used.

The lecture will give an overview about IT-based assistive technology (AT) for people with visual impairments. It covers the following topics:

- Information about visual impairments and their impact
- Existing assistive technology for various application areas
- AT to access information content
- Designing barrier-free software & websites
- Possibilities and ongoing research in using computer vision methods to develop novel AT for the visually impaired, e.g. to support mobility, and content access among other things.

V

Accessibility - Assistive Technologies for Visually Impaired Persons2400109, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)**Lecture (V)
Online**

Content

According to the World Health Organization there are 285 million visually impaired persons worldwide, of which 39 million are blind and 246 million have low vision. The partial or full loss of sight leads to a number of challenges that visually impaired persons have to face. These include difficulties in mobility and navigation in unknown terrain, missing information in social interaction or handling and finding of objects in daily life.

There are already several technical aids available to support blind and visually impaired persons. So digitized texts can be made accessible by sound output or Braille display. There are also various tools which are especially designed for blind persons such as 'speaking' clocks or pocket calculators. However, the most important technical aid by far to improve mobility is the white cane. Although a number of electronic aids to detect obstacles and to support orientation have been developed over the last years they only offer reduced functionality for a relatively high price and are therefore rarely used.

The lecture will give an overview about IT-based assistive technology (AT) for people with visual impairments. It covers the following topics:

- Information about visual impairments and their impact
- Existing assistive technology for various application areas
- AT to access information content
- Designing barrier-free software & websites
- Possibilities and ongoing research in using computer vision methods to develop novel AT for the visually impaired, e.g. to support mobility, and content access among other things.

T

6.5 Course: Advanced Data Structures [T-INFO-105687]

Responsible: Prof. Dr. Peter Sanders
Organisation: KIT Department of Informatics
Part of: [M-INFO-102731 - Advanced Data Structures](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each summer term	1



Events					
SS 2020	2400078	Advanced Data Structures	2/1 SWS	Block (B)	Sanders, Bingmann





T

6.6 Course: Advanced Empirical Asset Pricing [T-WIWI-110513]

Responsible: Jun.-Prof. Dr. Julian Thimme
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2530601	Advanced Empirical Asset Pricing	2 SWS	Lecture (V) / 	Thimme
WS 20/21	2530602	Übung zu Advanced Empirical Asset Pricing	1 SWS	Practice (Ü) / 	Thimme
Exams					
SS 2020	7900321	Advanced Empirical Asset Pricing		Prüfung (PR)	Thimme

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

Competence Certificate

The success control takes place in form of a written examination (60 min) during the semester break (according to §4(2), 1 SPO). If the number of participants is low, an oral examination (according to §4 (2), 2 SPO) may also be offered. The examination is offered every semester and can be repeated at any regular examination date.

A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Recommendation

We strongly recommend knowledge of the basic topics in investments (bachelor course), which will be necessary to be able to follow the course. In addition, prior participation in the Asset Pricing Master course is strongly recommended.

Annotation

New course from winter semester 2019/2020.

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

V

Advanced Empirical Asset Pricing

2530601, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

In this course we will discuss the fundamentals of Asset Pricing and how to test them. Although this is an Empirical Asset Pricing course, we deal with some concepts from Asset Pricing Theory that we can test afterwards (CAPM, ICAPM, CCAPM, recursive utility). Besides, the course will cover the most important empirical methods to do so. For that purpose, we will discuss the overarching tool *Generalized Method of Moments*, and the special cases of OLS and FMB regressions. Every second week, we will meet for a programming session, in which we will look at the data to draw our own conclusions. An introduction to the software MATLAB will be given at the beginning of the course. Students should bring a laptop to these sessions. Programming skills are not required but helpful.

We start with a review of the Stochastic Discount Factor, which is already known from the course „Asset Pricing“. We then derive the CAPM and the Consumption-CAPM as special cases from the general consumption-savings optimization problem of the rational investor. In the first part of the course we discuss the CAPM and, as natural extensions, models with multiple factors. Prominent phenomena such as the value premium and momentum are discussed. In the second part of the lecture we will study extensions of Consumption-CAPM and study the implications of exotic preferences.

Literature

Basisliteratur

Asset pricing / Cochrane, J.H. - Rev. ed., Princeton Univ. Press, 2005.

zur Vertiefung/ Wiederholung

Investments and Portfolio Management / Bodie, Z., Kane, A., Marcus, A.J. - 9. ed., McGraw-Hill, 2011.

The econometrics of financial markets / Campbell, J.Y., Lo, A.W., MacKinlay, A.C. - 2. printing, with corrections, Princeton Univ. Press, 1997.

T



6.7 Course: Advanced Game Theory [T-WIWI-102861]





Responsible: Prof. Dr. Karl-Martin Ehrhart
 Prof. Dr. Clemens Puppe
 Prof. Dr. Johannes Philipp Reiß

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-101500 - Microeconomic Theory](#)
[M-WIWI-101502 - Economic Theory and its Application in Finance](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2521533	Advanced Game Theory	2 SWS	Lecture (V) / 	Puppe
WS 20/21	2521534	Übung zu Advanced Game Theory	1 SWS	Practice (Ü) / 	Puppe
Exams					
SS 2020	7900317	Advanced Game Theory		Prüfung (PR)	Reiß

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

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

Basic knowledge of mathematics and statistics is assumed.

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

V

Advanced Game Theory

2521533, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

T

6.8 Course: Advanced Lab in Ubiquitous Computing [T-WIWI-102761]

Responsible: Prof. Dr.-Ing. Michael Beigl
Prof. Dr. Hartmut Schmeck

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101458 - Ubiquitous Computing](#)

Type	Credits	Recurrence	Version
Examination of another type	4	Irregular	1

Competence Certificate

See German version

Prerequisites

None

Annotation





See German Version





T

6.9 Course: Advanced Lab Informatics (Master) [T-WIWI-110548]

Responsible: Professorenschaft des Fachbereichs Informatik
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101455 - Web Data Management
M-WIWI-101456 - Intelligent Systems and Services
M-WIWI-101477 - Development of Business Information Systems
M-WIWI-105366 - Artificial Intelligence
M-WIWI-105368 - Web and Data Science

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

Events					
SS 2020	2512205	Lab Business Information Systems: Realisation of innovative services (Master)	3 SWS	Practical course (P)	Oberweis, Schiefer, Schüler, Toussaint
SS 2020	2512207	Lab Automation in Everyday Life (Master)	3 SWS	Practical course (P)	Oberweis, Forell, Frister
SS 2020	2512401	Development of Sociotechnical Information Systems (Master)	3 SWS	Practical course (P)	Sunyaev, Sturm
SS 2020	2512403	Praktikum Blockchain und Distributed Ledger Technology (Master)	SWS	Practical course (P)	Sunyaev, Beyene, Kannengießer, Pandl
SS 2020	2512500	Project Lab Machine Learning	3 SWS	Practical course (P)	Zöllner
SS 2020	2512555	Practical lab Security, Usability and Society (Master)	3 SWS	Practical course (P)	Volkamer, Strufe, Mayer, Mossano
WS 20/21	2512205	Lab Realisation of innovative services (Master)	3 SWS	Practical course (P) / 	Oberweis, Schiefer, Schüler, Toussaint
WS 20/21	2512403	Practical Course Blockchain Hackathon (Master)	SWS	Practical course (P) / 	Sunyaev, Kannengießer
WS 20/21	2512501	Practical Course Cognitive Automobiles and Robots (Master)	3 SWS	Practical course (P) / 	Zöllner
WS 20/21	2512600	Project lab Information Service Engineering (Master)	2 SWS	Practical course (P) / 	Sack
WS 20/21	2513312	Seminar Linked Data and the Semantic Web (Bachelor)	2 SWS	Seminar (S) / 	Sure-Vetter, Acosta Deibe, Käfer, Heling
WS 20/21	2513313	Seminar Linked Data and the Semantic Web (Master)	2 SWS	Seminar (S) / 	Sure-Vetter, Acosta Deibe, Käfer, Heling
Exams					
SS 2020	7900020	Lab Automation in Everyday Life (Master)		Prüfung (PR)	Oberweis
SS 2020	7900086	Project Lab Machine Learning		Prüfung (PR)	Zöllner
SS 2020	7900148	Advanced Lab in Information Systems: Realization of innovative services (Master)		Prüfung (PR)	Oberweis
SS 2020	7900172	Lab Blockchain and Distributed Ledger Technology (Master)		Prüfung (PR)	Sunyaev
SS 2020	7900173	Development of Sociotechnical Information Systems (Master)		Prüfung (PR)	Sunyaev
SS 2020	7900178	Practical lab Security, Usability and Society (Master)		Prüfung (PR)	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:

**Lab Business Information Systems: Realisation of innovative services (Master)****Practical course (P)**

2512205, SS 2020, 3 SWS, Language: German, [Open in study portal](#)

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.

**Lab Automation in Everyday Life (Master)****Practical course (P)**

2512207, SS 2020, 3 SWS, Language: German, [Open in study portal](#)

Content

As part of the lab, various topics on everyday automation are offered. During the lab, the participants will gain an insight into problem-solving oriented project work and work on a project together in small groups.

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.

**Development of Sociotechnical Information Systems (Master)****Practical course (P)**

2512401, SS 2020, 3 SWS, Language: German/English, [Open in study portal](#)

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.

**Project Lab Machine Learning****Practical course (P)**

2512500, SS 2020, 3 SWS, Language: German/English, [Open in study portal](#)

Content

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

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

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

Learning objectives:

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

Recommendations:

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

Workload:

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

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

**Practical lab Security, Usability and Society (Master)**

2512555, SS 2020, 3 SWS, Language: 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. 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.

Important dates:

Kick-off: April 24th, 2020, 14: 00-15: 30 Microsoft Teams - please check the WiWi portal

Final submission : 8. September 2020, 23:59

Presentation : 28. September 2020, 14:00

Subjects:

Privacy-friendly apps

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

Topics:

- NoPhish 2.0
- Notes 2.0
- Sudoku 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.

Topics:

- Password Manager Enrollment Add-On
- Portfolio Graphical Recognition-Based Passwords with Gamepads
- PassSec update
- TORPEDO - web service for different checks
- TORPEDO - Enabling to put identified phishing e-mails into the KIT-spam folder
- Privacy friendly and security friendly marketing analysis tool

Conducting Usable Security User studies (online studies only)

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

Topics:

- Investigating the Corona outbreak impact on privacy and security users' perception.
- Correlation between misconceptions about password security.
- Comparative analysis of several tutorials for TORPEDO.
- Investigating user reactions to Facebook behavioural data collection.
- Usability and adoption of password managers.

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 .

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

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

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

2512205, WS 20/21, 3 SWS, Language: German, [Open in study portal](#)

Practical course (P)
Online

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 Cognitive Automobiles and Robots (Master)**2512501, WS 20/21, 3 SWS, Language: German/English, [Open in study portal](#)**Practical course (P)
Online****Content**

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

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

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

Learning objectives:

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

Recommendations:

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

Workload:

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

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

**Project lab Information Service Engineering (Master)**2512600, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)**Practical course (P)
Blended (On-Site/Online)**

Content

The **ISE project course** is based on the summer semester lecture "**Information Service Engineering**". The topics of the ISE project course focus on artificial intelligence based applications. In particular, we are covering the following:

- Natural Language Processing
- Knowledge Graphs
- Deep Learning

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

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

Required coursework includes:

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

Notes:

The ISEproject course can also be credited as a **seminar**.

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

The project course will be restricted to 15 participants.

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

ISE Tutor Team:

- Dr. Mehwish Alam
- Dr. Danilo Dessi
- M. Sc. Genet Asefa Gesese
- M. Sc. Fabian Hoppe
- M. Sc. Zahra Rezaie
- M. Sc. Sasha Vsesviatska
- B. Sc. Tabea Tietz

Organizational issues

Projektpraktikum Information Service Engineering can also be credited as a **seminar**.

**Seminar Linked Data and the Semantic Web (Bachelor)**

2513312, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Content

Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this 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 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 Linked Data and the Semantic Web (Master)**

2513313, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Content

Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this 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 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.





T

6.10 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-104520 - Human Factors in Security and Privacy](#)

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

Events					
SS 2020	2512554	Practical lab Security, Usability and Society (Bachelor)	3 SWS	Practical course (P)	Volkamer, Strufe, Mayer, Mossano
WS 20/21	2512554	Practical Course Security, Usability and Society (Bachelor)	3 SWS	Practical course (P)	Volkamer, Aldag, Düzgün, Mayer, Mossano, Berens
WS 20/21	2512555	Practical Course Security, Usability and Society (Master)	3 SWS	Practical course (P) / 	Volkamer, Aldag, Düzgün, Mayer, Mossano, Berens
Exams					
SS 2020	7900029	Practical lab Security, Usability and Society (Bachelor)		Prüfung (PR)	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)

2512554, SS 2020, 3 SWS, Language: 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. 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.

Important dates:

Kick-off: April 24th, 2020, 14: 00-15: 30 Microsoft Teams - Please, check the WiWi portal

Final submission : 8. September 2020, 23:59

Presentation : 28. September 2020, 14:00

Subjects:

Privacy-friendly apps

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

Topics:

- NoPhish 2.0
- Notes 2.0
- Sudoku 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.

Topics:

- Password Manager Enrollment Add-On
- Portfolio Graphical Recognition-Based Passwords with Gamepads
- PassSec update
- TORPEDO - web service for different checks
- TORPEDO - Enabling to put identified phishing e-mails into the KIT-spam folder
- Privacy friendly and security friendly marketing analysis tool

Conducting Usable Security User studies (online studies only)

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

Topics:

- Investigating the Corona outbreak impact on privacy and security users' perception.
- Correlation between misconceptions about password security.
- Comparative analysis of several tutorials for TORPEDO.
- Investigating user reactions to Facebook behavioural data collection.
- Usability and adoption of password managers.

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 .

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

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

**Practical Course Security, Usability and Society (Bachelor)**

2512554, WS 20/21, 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. 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.

Important dates:

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

Final submission:

Presentation:

Subjects:

Privacy-friendly apps

Programming Usable Security Intervention

Conducting Usable Security User studies (online studies only)

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.

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

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



Practical Course Security, Usability and Society (Master)

2512555, WS 20/21, 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.

Important dates:

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

Final submission:

Presentation:

Subjects:

Privacy-friendly apps

Programming Usable Security Intervention

Conducting Usable Security User studies (online studies only)

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.

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

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

T

6.11 Course: Advanced Machine Learning [T-WIWI-109921]

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

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101470 - Data Science: Advanced CRM](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2540535	Advanced Machine Learning	2 SWS	Lecture (V)	Nazemi
SS 2020	2540536	Exercise Advanced Machine Learning	1 SWS	Practice (Ü)	Nazemi
Exams					
SS 2020	7900227	Advanced Machine Learning		Prüfung (PR)	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 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.

Prerequisites

None

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

V

Advanced Machine Learning

2540535, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

In recent years, the volume, variety, velocity, veracity, and variability of available data have increased due to improvements in computational and storage power. The rise of the Internet has made available large sets of data that allow us to use and merge them for different purposes. Data science helps us to extract knowledge from the continually-increasing large datasets. This course will introduce students to a wide range of machine learning and statistical techniques such as deep learning, LASSO, and support vector machine. You will get familiar with text mining, and the tools you need to analyze the various facets of data sets in practice. Students will learn theory and concepts with real data sets from different disciplines such as marketing, finance, and business.

Tentative Course Outline:

- Introduction
- Statistical Inference
- Shrinkage Methods
- Model Assessment and Selection
- Tree-based Machine Learning Algorithms
- Dimensionality Reduction
- Neural Networks and Deep Learning
- Natural Language Processing with Deep Learning
- Support Vector Machine

Time of attendance

- Attending the lecture: 13 x 90min = 19h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m

The student will learn

- A wide range of machine learning algorithms and their weaknesses.
- The fundamental issues and challenges: data, high-dimension, train, model selection, etc.
- How to imply machine learning algorithms for real-world applications.
- The fundamentals of deep learning, main research activities, and on-going research in this field.

Literature


- Alpaydin, E. (2014). Introduction to Machine Learning. Third Edition, MIT Press.
- De Prado, M. L. (2018). Advances in Financial Machine Learning. John Wiley & Sons.
- Goodfellow, I., Bengio, Y., and A. Courville (2017). Deep Learning. MIT Press. (online available)
- Hastie, T., Tibshirani, R., and J. Friedman (2009). Elements of Statistical Learning. Second Edition. Springer. (online available)
- Leskovec, J., Rajaraman, A., Ullman, J. D., (2014). Mining of Massive Datasets. Cambridge University Press. (online available)
- Witten, I. H., Eibe, F., Hall, M. A., Pal, C. J. (2016). Data Mining: Practical Machine Learning Tools and Techniques. Morgan Kaufmann.





T

6.12 Course: Advanced Management Accounting [T-WIWI-102885]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101510 - Cross-Functional Management Accounting](#)

Type	Credits	Recurrence	Version
Oral examination	4,5	Each winter term	2

Events					
WS 20/21	2579907	Advanced Management Accounting	4 SWS	Lecture / Practice (VÜ) / 	Wouters, Riar

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

Competence Certificate

The assessment consists of an oral exam (30 min) (according to §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.

Recommendation

The course requires significant prior knowledge of Management Accounting, similar to the content of the courses MA 1 and 2, although completion of these particular courses is not a formal requirement.

Annotation

This course is held in English. Lectures and tutorials are integrated.

The course is compulsory and must be examined.

Students who are interested in attending this course should send an e-mail to Professor Wouters (marc.wouters@kit.edu).

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

V

Advanced Management Accounting

2579907, WS 20/21, 4 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)
On-Site

Content

This course is held in English. Students who are interested in attending this course should send an e-mail to Professor Wouters (marc.wouters@kit.edu).

Inhalt:

- The course addresses several topics where management accounting is strongly related to marketing, finance, or organization and strategy, such as customer value propositions, financial performance measures, managing new product development, and technology investment decisions.

Learning objectives:

- Students will be able to consider advanced management accounting methods in an interdisciplinary way and to apply these to managerial decision-making problems in operations and innovation.
- They will also be able to identify relevant research results on such methods.

Examination:

- The assessment consists of an oral exam (30 min) taking place in the recess period (according to § 4 (2) No. 2 of the examination regulation).
- The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Required prior Courses:

- The course is compulsory and must be examined.

Recommendations:

- The course requires significant prior knowledge of Management Accounting, similar to the content of the courses MA 1 and 2, although completion of these particular courses is not a formal requirement.

Workload:

- The total workload for this course is approximately 135 hours. For further information see German version.

Literature

Literature is mostly made available via ILIAS.

T

6.13 Course: Advanced Management Accounting 2 [T-WIWI-110179]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101510 - Cross-Functional Management Accounting](#)

Type	Credits	Recurrence	Version
Oral examination	4,5	see Annotations	1

Events					
SS 2020	2579908	Advanced Management Accounting 2	4 SWS	Lecture / Practice (VÜ)	Wouters, Ebinger
Exams					
SS 2020	792579908-M	Advanced Management Accounting 2		Prüfung (PR)	Wouters

Competence Certificate

The examination will no longer be offered as of summer semester 2021.

Prerequisites

None.

Recommendation

The course requires significant prior knowledge of Management Accounting, similar to the content of the courses MA 1 and 2, although completion of these particular courses is not a formal requirement.

Annotation

Lecture and examination will no longer be offered from summer semester 2021.

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

V

Advanced Management Accounting 2

2579908, SS 2020, 4 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)

Organizational issues



Do 08:00 - 11:30 Uhr in Geb. 05.20 R 2A-19





T

6.14 Course: Advanced Statistics [T-WIWI-103123]

Responsible: Prof. Dr. Oliver Grothe
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101637 - Analytics and Statistics](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2550552	Statistik für Fortgeschrittene	2 SWS	Lecture (V) / 	Grothe
WS 20/21	2550553	Übung zu Statistik für Fortgeschrittene	2 SWS	Practice (Ü) / 	Grothe, Kaplan
Exams					
SS 2020	7900350	Advanced Statistics		Prüfung (PR)	Grothe

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. A bonus program can improve the grade by one grade level (i.e. by 0.3 or 0.4). The exam is offered every semester. Re-examinations are offered only for repeaters.

Prerequisites

None

Annotation

New course starting winter term 2015/2016

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

V

Statistik für Fortgeschrittene

2550552, WS 20/21, 2 SWS, [Open in study portal](#)

Lecture (V)
Online

Literature

Skript zur Vorlesung

T

6.15 Course: Advanced Stochastic Optimization [T-WIWI-106548]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)
[M-WIWI-103289 - Stochastic Optimization](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

Exams				
SS 2020	7900278	Advanced Stochastic Optimization	Prüfung (PR)	Rebennack

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The exam takes place in every the semester.

Prerequisites

None.

T

6.16 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-101406 - Network Economics](#)[M-WIWI-101500 - Microeconomic Theory](#)[M-WIWI-101502 - Economic Theory and its Application in Finance](#)**Type**
Written examination**Credits**
4,5**Recurrence**
Irregular**Version**
1

Events					
SS 2020	2520527	Advanced Topics in Economic Theory	2 SWS	Lecture (V)	Mitusch, Scheffel
SS 2020	2520528	Übung zu Advanced Topics in Economic Theory	1 SWS	Practice (Ü)	Pegorari
Exams					
SS 2020	7900329	Advanced Topics in Economic Theory		Prüfung (PR)	Mitusch, Scheffel
SS 2020	7900356	Advanced Topics in Economic Theory		Prüfung (PR)	Mitusch, Brumm

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 Theory2520527, SS 2020, 2 SWS, Language: English, [Open in study portal](#)**Lecture (V)****Literature**

Die Veranstaltung wird in englischer Sprache angeboten:

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

T

6.17 Course: Algorithm Engineering [T-INFO-101332]

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

Organisation: KIT Department of Informatics

Part of: [M-INFO-100795 - Algorithm Engineering](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each summer term	1

Events					
SS 2020	2400051	Algorithm Engineering	2/1 SWS	Lecture (V)	Sanders, Schreiber
Exams					
SS 2020	75514	Algorithm Engineering		Prüfung (PR)	Sanders

T

6.18 Course: Algorithmic Graph Theory [T-INFO-103588]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [M-INFO-100762 - Algorithmic Graph Theory](#)

Type
Oral examination

Credits
5

Recurrence
Irregular

Version
1

Events					
SS 2020	2400028	Algorithmische Graphentheorie	2+1 SWS	Lecture / Practice (VÜ)	Ueckerdt, Gritzbach
Exams					
SS 2020	7500238	Algorithmic Graph Theory		Prüfung (PR)	Ueckerdt

T

6.19 Course: Algorithmic Methods for Network Analysis [T-INFO-104759]

Responsible: Dr. rer. nat. Torsten Ueckerdt
Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: [M-INFO-102400 - Algorithmic Methods for Network Analysis](#)

Type
Oral examination

Credits
5

Recurrence
Irregular

Version
1

Events					
SS 2020	2400018	Algorithmic Methods for Network Analysis	2+1 SWS	Lecture / Practice (VÜ)	Ueckerdt, Barth
Exams					
SS 2020	7500319	Algorithmic Methods for Network Analysis		Prüfung (PR)	Ueckerdt

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

V

Algorithmic Methods for Network Analysis

2400018, SS 2020, 2+1 SWS, Language: German, [Open in study portal](#)

Lecture / Practice (VÜ)

Content
150 h

Literature

Brandes, Erlebach: Network Analysis - Methodological Foundations. Springer, 2005.

Newman: Networks. An Introduction. Oxford University Press, 2010.

T**6.20 Course: Algorithms for Ad-Hoc and Sensor Networks [T-INFO-104388]**

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [M-INFO-102093 - Algorithms for Ad-Hoc and Sensor Networks](#)

Type
Oral examination

Credits
5

Recurrence
Irregular

Version
1

T

6.21 Course: Algorithms for Routing [T-INFO-100002]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [M-INFO-100031 - Algorithms for Routing](#)

Type	Credits	Recurrence	Version
Written examination	5	Each summer term	1

Events					
SS 2020	24638	Algorithmen für Routenplanung (mit Übungen)	3 SWS	Lecture / Practice (VÜ)	Buchhold, Zeitz, Zündorf, Sauer, Ueckerdt
Exams					
SS 2020	7500019	Algorithms for Routing		Prüfung (PR)	Ueckerdt

T**6.22 Course: Algorithms for Visualization of Graphs [T-INFO-104390]**


Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [M-INFO-102094 - Algorithms for Visualization of Graphs](#)





Type
Oral examination

Credits
5

Recurrence
Irregular

Version
1

Events					
WS 20/21	24118	Algorithmen zur Visualisierung von Graphen	2+1 SWS	Lecture / Practice (VÜ) / 	Ueckerdt, Jungeblut

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

T


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


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

Organisation: KIT Department of Informatics

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

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 20/21	24079	Algorithms II	4 SWS	Lecture (V) / 	Sanders, Heuer, Seemaier
Exams					
SS 2020	7500464	Algorithms II		Prüfung (PR)	Sanders

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

T

6.24 Course: Algorithms in Cellular Automata [T-INFO-101334]

Responsible: Thomas Worsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-100797 - Algorithms in Cellular Automata](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each summer term	1

Events					
SS 2020	24622	Algorithms for Cellular Automata	3 SWS	Lecture (V)	Worsch, Vollmar
Exams					
SS 2020	75400001	Algorithms in Cellular Automata		Prüfung (PR)	Worsch

T

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

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

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

Exams				
SS 2020	7900344	Analysis of Multivariate Data	Prüfung (PR)	Grothe

Competence Certificate

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

Prerequisites

None

Recommendation

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

Annotation

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

T

6.26 Course: Analyzing and Evaluating Innovation Processes [T-WIWI-108774]

Responsible: Dr. Daniela Beyer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each winter term	1

Competence Certificate

Non exam assessment (following §4(2) 3 of the examination regulation).

Innovation plan (exposé) (20%), Guided interviews/ quantitative survey (20%), presentation of results (20%), seminar paper (about 5 pages per person) (40%).

Prerequisites

None

Recommendation

Prior attendance of the course Innovation Management is recommended.

T

6.27 Course: Analyzing Big Data - Laboratory Course [T-INFO-103202]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101663 - Practical Course: Analyzing Big Data](#)

Type	Credits	Recurrence	Version
Completed coursework (written)	6	Each summer term	3

Events					
SS 2020	24874	Analyzing Big Data Laboratory Course	2 SWS	Practical course (P)	Böhm, Bach
Exams					
SS 2020	7500307	Analyzing Big Data - Laboratory Course		Prüfung (PR)	Böhm

T


6.28 Course: Application Security Lab [T-INFO-106289]



Responsible: Dr. Willi Geiselmann
Prof. Dr. Jörn Müller-Quade

Organisation: KIT Department of Informatics

Part of: [M-INFO-103166 - Application Security Lab](#)

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

Events					
SS 2020	2400114	Application security lab	4 SWS	Practical course (P)	Hartung, Müller-Quade, Mechler, Dörre, Wressnegger
WS 20/21	2400114	Application security lab	4 SWS	Practical course (P) / 	Hartung, Müller-Quade, Mechler, Wressnegger, Dörre
Exams					
SS 2020	7500119	Application Security Lab		Prüfung (PR)	Geiselmann, Müller-Quade

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

T

6.29 Course: Applied Differential Geometry [T-INFO-104546]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-102226 - Applied Differential Geometry](#)

Type
Oral examination

Credits
4

Recurrence
Each term

Version
2

Exams				
SS 2020	7524175	Applied Differential Geometry	Prüfung (PR)	Prautzsch

T**6.30 Course: Applied Differential Geometry - Practical [T-INFO-111000]**

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-102226 - Applied Differential Geometry](#)

Type	Credits	Recurrence	Version
Examination of another type	1	Each term	1

T**6.31 Course: Applied Econometrics [T-WIWI-103125]**

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101638 - Econometrics and Statistics I](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

Competence Certificate

The assessment of this course is a written examination (90 min) according to §4(2), 1 of the examination regulation.

Prerequisites

None

Annotation

The course is not offered regularly.

T

6.32 Course: Artificial Intelligence in Service Systems [T-WIWI-108715]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101448 - Service Management](#)
[M-WIWI-101506 - Service Analytics](#)
[M-WIWI-103117 - Data Science: Data-Driven Information Systems](#)
[M-WIWI-104814 - Information Systems: Analytical and Interactive Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2595650	Artificial Intelligence in Service Systems	2 SWS	Lecture (V)	Kühl, Vössing
Exams					
SS 2020	7900240	Artificial Intelligence in Service Systems		Prüfung (PR)	Satzger
SS 2020	7900271	Artificial Intelligence in Service Systems - oral		Prüfung (PR)	Satzger

Competence Certificate

The assessment consists of a written exam (60 min). Successful completion of the exercises is a prerequisite for admission to the written exam.

Prerequisites

None

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

V

Artificial Intelligence in Service Systems

2595650, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

Artificial Intelligence (AI) and the application of machine learning is becoming more and more popular to solve relevant business challenges. However, it is not only important to be familiar with precise algorithms, but rather a general understanding of the necessary steps with a holistic view—from real-world challenge to successful deployment of an AI-based solution. As part of this course, we teach the complete lifecycle of an AI project with a focus on supervised machine learning challenges. We do so by also teaching the use of Python and the required packages like scikit-learn and tensorflow with exemplary data. We then take this knowledge to the more complex case of service systems with different entities (e.g., companies) who interact with each other and show possibilities on how to derive holistic insights. Two possibilities to do so are the use of meta and transfer machine learning, where we teach insights in their theory, design and application.

Students of this course will be able to understand and implement the complete lifecycle of a typical Artificial Intelligence use case with supervised machine learning. Furthermore, they understand the importance and the means of applying AI and Machine Learning within service systems, which allows multiple, independent entities to collaborate and derive insights. Students will be proficient with typical Python code for AI challenges.

Literature

- Baier, Lucas, Niklas Kühl, and Gerhard Satzger. "How to Cope with Change?-Preserving Validity of Predictive Services over Time." Proceedings of the 52nd Hawaii International Conference on System Sciences. 2019.
- Cawley, Gavin C., and Nicola LC Talbot. "On over-fitting in model selection and subsequent selection bias in performance evaluation." *Journal of Machine Learning Research* 11.Jul (2010): 2079-2107.
- Fromm, Hansjörg, Francois Habryn, and Gerhard Satzger, "Service analytics: Leveraging data across enterprise boundaries for competitive advantage," in *Globalization of Professional Services*, 2012, pp. 139–149.
- Gama, J, I. Žliobaitė, A. Bifet, M. Pechenizkiy, and A. Bouchachia, "A survey on concept drift adaptation," *ACM Comput. Surv.*, vol. 46, no. 4, pp. 1–37, 2014.
- Hirt, Robin, Niklas Kühl, and Gerhard Satzger. "An end-to-end process model for supervised machine learning classification: from problem to deployment in information systems." *Designing the Digital Transformation: DESRIST 2017 Research in Progress Proceedings of the 12th International Conference on Design Science Research in Information Systems and Technology*. Karlsruhe, Germany. 30 May-1 Jun. Karlsruher Institut für Technologie (KIT), 2017.
- Hirt, Robin, and Niklas Kühl. "Cognition in the Era of Smart Service Systems: Inter-organizational Analytics through Meta and Transfer Learning." (2018).
- Hirt, Robin, Niklas Kühl, and Gerhard Satzger. "Cognitive computing for customer profiling: meta classification for gender prediction." *Electronic Markets* 29.1 (2019): 93-106.
- Kühl, N., Goutier, M., Hirt, R., & Satzger, G. (2019, January). Machine learning in artificial intelligence: Towards a common understanding. In *Proceedings of the 52nd Hawaii International Conference on System Sciences*.
- Kühl, Niklas, Marius Mühlthaler, and Marc Goutier. "Supporting customer-oriented marketing with artificial intelligence: automatically quantifying customer needs from social media." *Electronic Markets* (2019): 1-17
- Martin, Dominik, Robin Hirt, and Niklas Kühl. "Service Systems, Smart Service Systems and Cyber-Physical Systems—What's the difference? Towards a Unified Terminology." (2019).
- Müller, Vincent C., and Nick Bostrom. "Future progress in artificial intelligence: A survey of expert opinion." *Fundamental issues of artificial intelligence*. Springer, Cham, 2016. 555-572.
- Pan, Sinno Jialin, and Qiang Yang. "A survey on transfer learning." *IEEE Transactions on knowledge and data engineering* 22.10 (2009): 1345-1359.

T

6.33 Course: Asset Pricing [T-WIWI-102647]

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

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101482 - Finance 1](#)
[M-WIWI-101483 - Finance 2](#)
[M-WIWI-101502 - Economic Theory and its Application in Finance](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Events					
SS 2020	2530555	Asset Pricing	2 SWS	Lecture (V)	Uhrig-Homburg, Thimme
SS 2020	2530556	Übung zu Asset Pricing	1 SWS	Practice (Ü)	Uhrig-Homburg, Reichenbacher
Exams					
SS 2020	7900110	Asset Pricing		Prüfung (PR)	Uhrig-Homburg

Competence Certificate

The success control takes place in form of a written examination (75 min) during the semester break (according to §4(2), 1 SPO).

The examination is offered every semester and can be repeated at any regular examination date.

A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites

None

Recommendation

We strongly recommend knowledge of the basic topics in investments (bachelor course), which will be necessary to be able to follow the course.

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

V

Asset Pricing

2530555, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature**Basisliteratur**

- Asset pricing / Cochrane, J.H. - Rev. ed., Princeton Univ. Press, 2005.

Zur Wiederholung/Vertiefung

- Investments and Portfolio Management / Bodie, Z., Kane, A., Marcus, A.J. - 9. ed., McGraw-Hill, 2011.
- The econometrics of financial markets / Campbell, J.Y., Lo, A.W., MacKinlay, A.C. - 2. printing, with corrections, Princeton Univ. Press, 1997.

T

6.34 Course: Asymmetric Encryption Schemes [T-INFO-101260]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: [M-INFO-100723 - Asymmetric Encryption Schemes](#)

Type
Oral examination

Credits
3

Recurrence
Each winter term

Version
1



Exams				
SS 2020	7500180	Asymmetric Encryption Schemes	Prüfung (PR)	Geiselman, Müller-Quade



T

6.35 Course: Auction Theory [T-WIWI-102613]

Responsible: Prof. Dr. Karl-Martin Ehrhart
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101446 - Market Engineering](#)
[M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-101500 - Microeconomic Theory](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2520408	Auktionstheorie	2 SWS	Lecture (V) / 	Ehrhart
WS 20/21	2520409	Übungen zu Auktionstheorie	1 SWS	Practice (Ü) / 	Ehrhart
Exams					
SS 2020	7900255	Auction Theory		Prüfung (PR)	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

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

V

Auktionstheorie

2520408, WS 20/21, 2 SWS, [Open in study portal](#)

Lecture (V)
Online

Literature

- Ehrhart, K.-M. und S. Seifert: Auktionstheorie, Skript zur Vorlesung, KIT, 2011
- Krishna, V.: Auction Theory, Academic Press, Second Edition, 2010
- Milgrom, P.: Putting Auction Theory to Work, Cambridge University Press, 2004
- Ausubel, L.M. und P. Cramton: Demand Reduction and Inefficiency in Multi-Unit Auctions, University of Maryland, 1999

T**6.36 Course: Automated Planning and Scheduling [T-INFO-109085]**

Responsible: Prof. Dr. Peter Sanders
Organisation: KIT Department of Informatics
Part of: [M-INFO-104447 - Automated Planning and Scheduling](#)


Type	Credits	Recurrence	Version
Oral examination	5	Each winter term	1





T

6.37 Course: Automated Visual Inspection and Image Processing [T-INFO-101363]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: [M-INFO-100826 - Automated Visual Inspection and Image Processing](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	2

Events					
WS 20/21	24169	Automated Visual Inspection and Image Processing	4 SWS	Lecture (V) / 	Beyerer
Exams					
SS 2020	7500003	Automated Visual Inspection and Image Processing		Prüfung (PR)	Beyerer
WS 20/21	7500008	Automated Visual Inspection and Image Processing		Prüfung (PR)	Beyerer

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

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

V

Automated Visual Inspection and Image Processing

24169, WS 20/21, 4 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content**Topics covered:**

- sensors and concepts for image acquisition
- light and colour
- image signals (system theory, Fourier transformation, stochastic processes)
- excursion to wave optics
- pre-processing and image enhancement
- image restoration
- segmentation
- morphological image processing
- texture analysis
- detection
- image pyramids, multi scale analysis and wavelet-transform

Educational objective:

- Students have a sound knowledge regarding the basic concepts and methods of image processing (pre-processing and image enhancement, image restoration, image segmentation, morphological filtering, texture analysis, detection, image pyramids, multi-scale analysis and the wavelet transform)
- Students are in the position to work out and to evaluate solution concepts for problems of automated visual inspection
- Students have a sound knowledge of the different sensors and methods for the acquisition of image data as well as of the relevant optical principles
- Students know different concepts to describe image data and they know the essential system theoretical concepts and interrelations

Organizational issues

Die Erfolgskontrolle wird in der Modulbeschreibung erläutert.

Empfehlungen:

Grundkenntnisse der Optik und der Signalverarbeitung sind hilfreich.

Literature**Weiterführende Literatur**

- R. C. Gonzalez und R. E. Woods, Digital Image Processing, Prentice-Hall, Englewood Cliffs, New Jersey, 2002
- B. Jähne, Digitale Bildverarbeitung, Springer, Berlin, 2002

T


6.38 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-101511 - Advanced Topics in Public Finance](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 20/21	2560134	Basics of German Company Tax Law and Tax Planning	3 SWS	Lecture (V) / 	Wigger, Gutekunst
Exams					
SS 2020	790unbe	Basics of German Company Tax Law and Tax Planning		Prüfung (PR)	Wigger

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

Competence Certificate

The assessment consists of a written exam (90 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites

None

Recommendation

Knowledge of the collection of public revenues is assumed. Therefore it is recommended to attend the course "Öffentliche Einnahmen" beforehand.

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

V

Basics of German Company Tax Law and Tax Planning

2560134, WS 20/21, 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

6.39 Course: Big Data Analytics [T-INFO-101305]


Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-100768 - Big Data Analytics](#)
[M-WIWI-104814 - Information Systems: Analytical and Interactive Systems](#)





Type
Oral examination

Credits
5

Recurrence
Each winter term

Version
1

Events					
WS 20/21	24114	Big Data Analytics	3 SWS	Lecture (V) / 	Böhm
Exams					
SS 2020	7500078	Big Data Analytics		Prüfung (PR)	Böhm
SS 2020	7500149	Big Data Analytics		Prüfung (PR)	Böhm

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

T**6.40 Course: Big Data Analytics 2 [T-INFO-105742]**

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-102773 - Big Data Analytics 2](#)

Type
Oral examination

Credits
3

Recurrence
Irregular

Version
1

Events					
SS 2020	2400042	Big Data Analytics 2	2 SWS	Lecture (V)	Böhm
Exams					
SS 2020	7500092	Big Data Analytics 2		Prüfung (PR)	Böhm

Prerequisites

none

T

6.41 Course: Biologically Inspired Robots [T-INFO-101351]

Responsible: Prof. Dr.-Ing. Rüdiger Dillmann
Dr.-Ing. Arne Rönnau

Organisation: KIT Department of Informatics

Part of: [M-INFO-100814 - Biologically Inspired Robots](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	1

Events					
SS 2020	24619	Biologisch Motivierte Robotersysteme	2 SWS	Lecture (V)	Rönnau
Exams					
SS 2020	7500237	Biologically Inspired Robot		Prüfung (PR)	Rönnau
WS 20/21	7500346	Biologically Inspired Robot		Prüfung (PR)	Rönnau

T

6.42 Course: Biometric Systems for Person Identification [T-INFO-105948]

Responsible: Prof. Dr.-Ing. Rainer Stiefelhagen
Organisation: KIT Department of Informatics
Part of: [M-INFO-102968 - Biometric Systems for Person Identification](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	1

Events					
SS 2020	2403011	Biometric Systems for Person Identification	2 SWS	Lecture (V)	Sarfraz
Exams					
SS 2020	7500025	Biometric Systems for Person Identification		Prüfung (PR)	Stiefelhagen

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

V

Biometric Systems for Person Identification

2403011, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

Biometrics deals with the science of recognizing and identifying humans based on their biometrics traits, such as finger prints, face, iris, gait etc. With the increasing demands put on security and surveillance e.g. safer access control, border control/passports and identifying criminals /law enforcement, biometrics becomes more and more essential and technologies are being developed to solve many issues in this demanding area of research. In this course, the students will learn the fundamental concepts of underlying biometrics technologies, understanding of various techniques for different topics/technologies used in biometrics.

The topics include

- Introduction: Biometrics acquisitions and image processing, basic introduction to the area of computer vision/machine learning applied to biometrics
- Biometrics system: requirements, enrollment, identification/verification, performance metrics
- Biometrics technologies: Overview of different biometrics technologies
- Finger print recognition: image enhancement, state-of-the art techniques, challenges
- Iris recognition: image acquisitions, feature extraction, state-of-the-art techniques, challenges
- Face recognition: introduction, current methods, applications
- Palm print recognition: current methods
- Gait recognition: emerging methods
- Multi-Biometrics: multiple modes of biometrics, fusion strategies
- Risk analysis: attacks, liveness detection, fraud prevention

T

6.43 Course: Blockchains & Cryptofinance [T-WIWI-108880]

Responsible: Dr. Philipp Schuster
Prof. Dr. Marliese Uhrig-Homburg

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101409 - Electronic Markets](#)
[M-WIWI-101446 - Market Engineering](#)
[M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

Type	Credits	Recurrence	Version
Written examination	4,5	see Annotations	1

Exams				
SS 2020	7900260	Blockchains & Cryptofinance	Prüfung (PR)	Uhrig-Homburg

Competence Certificate

The assessment consists of a written exam (75 min) (§4(2), 1 of the examination regulations).

A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites

None

Recommendation

None

Annotation


The lecture is currently not offered.

T

6.44 Course: Bond Markets [T-WIWI-110995]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2530560	Bond Markets	3 SWS	Lecture / Practice (VÜ) / 	Cölsch, Uhrig-Homburg

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

Competence Certificate

The assessment consists of a written exam (75min.) A bonus can be earned through successful participation in the tutorial sessions. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one level (0.3 or 0.4). The examination is offered in each semester and can be repeated at any regular examination date.

Annotation

This course will be held in English.

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

V

Bond Markets

2530560, WS 20/21, 3 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

Content

The lecture "Bond Markets" deals with the national and international bond markets, which are an important source of financing for companies, as well as for the public sector. After an overview of the most important bond markets, different yield definitions are discussed. Based on this, the concept of the yield curve is presented. In addition, the theoretical and empirical relationships between ratings, default probabilities and spreads are analyzed. The focus will then be on questions regarding the valuation, measurement, management and control of credit risks.

The total workload for this course is approximately 135 hours (4.5 credits).

The assessment consists of a written exam (75min.) (according to §4(2), 1 SPO). A bonus can be earned through successful participation in the tutorial sessions. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one level (0.3 or 0.4). The examination is offered in each semester and can be repeated at any regular examination date.

Students deepen their knowledge of national and international bond markets. They gain knowledge of the traded instruments and their key figures for describing default risk such as ratings, default probabilities or credit spreads.

Organizational issues

Blockveranstaltung: Do 14:00-19:00 Uhr, Fr 9:45-17:15 Uhr


05./06.11., 19./20.11., 03./04.12.20





T

6.45 Course: Bond Markets - Models & Derivatives [T-WIWI-110997]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each winter term	1

Events					
WS 20/21	2530565	Bond Markets - Models & Derivatives	2 SWS	Lecture / Practice (VÜ) / 	Grauer, Uhrig-Homburg

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

Competence Certificate

The assessment of success consists in equal parts of a written thesis and an oral exam including a discussion of one's own work. The main examination is offered once a year, re-examinations every semester.

Recommendation

Knowledge of "Bond Markets" and "Derivatives" courses is very helpful.

Annotation

This course will be held in English.

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

V

Bond Markets - Models & Derivatives

2530565, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

Content

- **Competence Certificate:** The assessment of success consists in equal parts of a written thesis and an oral exam (according to §4(2), 3 SPO) including a discussion of one's own work. The main examination is offered once a year, re-examinations every semester.
- **Competence Goal:** Students deepen their knowledge of national and international bond markets. They are able to apply the knowledge they have gained about traded instruments and common valuation models for pricing derivative financial instruments.
- **Prerequisites:**
- **Content:** The lecture "Bond Markets – Models & Derivatives" deepens the content of the lecture "Bond Markets". The modelling of the dynamics of yield curves and the management of credit risks forms the theoretical foundation for the valuation of interest rate and credit derivatives to be discussed. In this course, students deal intensively with selected topics and acquire the relevant knowledge on their own.
- **Recommendation:** Knowledge of "Bond Markets" and "Derivatives" courses is very helpful.
- **Workload:** The total workload for this course is approximately 90 hours (3.0 credits).

Organizational issues

Blockveranstaltung


freitags 9:45-17:15 Uhr, 15.01. und 22.01.21

T

6.46 Course: Bond Markets - Tools & Applications [T-WIWI-110996]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

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

Events					
WS 20/21	2530562	Bond Markets - Tools & Applications	1 SWS	Block (B) / 	Uhrig-Homburg, Grauer

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

Competence Certificate

The assessment consists of an empirical case study with written elaboration and presentation. The main examination is offered once a year, re-examinations every semester.

Recommendation

Knowledge of the "Bond Markets" course is very helpful.

Annotation

This course will be held in English.

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

V

Bond Markets - Tools & Applications

2530562, WS 20/21, 1 SWS, Language: English, [Open in study portal](#)

Block (B)
Online

Content

- **Competence Certificate:** The assessment consists of an empirical case study with written elaboration and presentation (according to §4(2), 3 SPO). The main examination is offered once a year, re-examinations every semester.
- **Competence Goal:** The students apply various methods in practice within the framework of a project-related case study. They are able to deal with empirical data and analyze them in a targeted manner.
- **Content:** The course "Bond Markets – Tools & Applications" includes a hands-on project in the field of national and international bond markets. Using empirical datasets, the students have to apply practical methods in order to analyze the data in a targeted manner.
- **Recommendation:** Knowledge of the "Bond Markets" course is very helpful.
- **Workload:** The total workload for this course is approximately 45 hours (1.5 credits).

Organizational issues

Blockveranstaltung am 11.12.20, Zeiten nach gesondertem Aushang

Seminarraum 320 Geb. 09.21

T**6.47 Course: Business Administration in Information Engineering and Management [T-WIWI-102886]**

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101409 - Electronic Markets](#)

Type	Credits	Recurrence	Version
Written examination	5	Each summer term	1

Exams				
SS 2020	7979537	Business Administration in Information Engineering and Management	Prüfung (PR)	Geyer-Schulz

Competence Certificate

The lecture is no longer offered.

Prerequisites

None

Recommendation

Basic knowledge from Operations Research (linear programming) and from decision theory are expected.

T

6.48 Course: Business Data Analytics: Application and Tools [T-WIWI-109863]**Responsible:** Prof. Dr. Christof Weinhardt**Organisation:** KIT Department of Economics and Management

Part of: [M-WIWI-103117 - Data Science: Data-Driven Information Systems](#)
[M-WIWI-103118 - Data Science: Data-Driven User Modeling](#)
[M-WIWI-104812 - Information Systems: Engineering and Transformation](#)
[M-WIWI-104814 - Information Systems: Analytical and Interactive Systems](#)

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

Events					
SS 2020	2540466	Business Data Analytics: Application and Tools	2 SWS	Lecture (V)	Dann, Staudt, Haubner
SS 2020	2540467	Exercise Business Data Analytics: Application and Tools	1 SWS	Practice (Ü)	Jaquart
Exams					
SS 2020	7900183	Business Data Analytics: Application and Tools		Prüfung (PR)	Weinhardt
SS 2020	7900189	Business Data Analytics: Application and Tools		Prüfung (PR)	Weinhardt

Competence Certificate

The assessment is carried out by a written examination (60 minutes) and a written elaboration. The scoring scheme for the overall evaluation will be announced at the beginning of the course.

Prerequisites

None

Recommendation

Knowledge of object-oriented programming and statistics is helpful.

Annotation

Course name until winter semester 2018/2019 "Applied Analytics with Open Source Tools" (T-WIWI-108438)

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

V

Business Data Analytics: Application and Tools

2540466, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

T

6.49 Course: Business Data Strategy [T-WIWI-106187]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103117 - Data Science: Data-Driven Information Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2540484	Business Data Strategy	2 SWS	Lecture (V) /	Weinhardt, van Dinther
WS 20/21	2540485	Übung zu Business Data Strategy	1 SWS	Practice (Ü) /	Weinhardt, Badewitz

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 and an alternative exam assessment according to § 4 paragraph 2 Nr. 3 of the examination regulation. The grade is determined by 2/3 through the written exam and by 1/3 through the alternative exam assessment (e.g., presentation).

Prerequisites

None

Recommendation

Students should be familiar with basic concepts of business organisations, information systems, and programming. However, all material will be introduced, so no formal pre-conditions are applied.

Annotation

Limited number of participants.

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

V

Business Data Strategy

2540484, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
On-Site

Content

With new methods for capturing and using different types of data and industry's recognition that society's use of data is less than optimal, the need for comprehensive strategies is more important than ever before. Advances in cybersecurity and information sharing and the use of data in its raw form for decision making all add to the complexity of integrated processes, ownership, stewardship, and sharing. The life cycle of data in its entirety spans the infrastructure, system design, development, integration, and implementation of information-enabling solutions. This lecture focuses on teaching about these dynamics and tools to comprehend and manage them in organisation contexts. Given the increasing size and complexity of data, methods for the transformation and structured preparation are an important tool in the process of sense-making. Modern software solutions and programming languages provide frameworks for such tasks that form another part of this course ranging from conceptual systems modelling to data manipulation to automated generation of HTML reports and web-applications.

Organizational issues**Application/Registration**

Attendance will be limited to 20-25 participants. Application/registration is therefore preliminary. After the application deadline has passed, positions will be allocated, based on evaluation of the previous study records. Applications are accepted only through the Wiwi-Portal: <https://portal.wiwi.kit.edu/ys/3871>

Anmeldung

Die Teilnehmeranzahl ist begrenzt (ca. 20-25 Plätze). Eine Anmeldung erfolgt deshalb zunächst unter Vorbehalt. Nach Ablauf der Anmeldefrist werden die Plätze zur Teilnahme, nach Einsicht der Vorleistungen im Studium vergeben. Die Anmeldung/Bewerbung erfolgt ausschließlich über das Wiwi-Portal: <https://portal.wiwi.kit.edu/ys/3871>

T

6.50 Course: Business Dynamics [T-WIWI-102762]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101409 - Electronic Markets](#)
[M-WIWI-101470 - Data Science: Advanced CRM](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2540531	Business Dynamics	2 SWS	Lecture (V)	Geyer-Schulz, Glenn
WS 20/21	2540532	Exercise Business Dynamics	1 SWS	Practice (Ü)	Geyer-Schulz, Glenn
Exams					
SS 2020	7900307	Business Dynamics (Nachklausur WS 2019/2020)		Prüfung (PR)	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 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.

Prerequisites

None

Recommendation

None

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

V

Business Dynamics

2540531, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Organizational issues

Blockveranstaltung freitags, samstags 8 -17:15 Uhr

Literature

John D. Sterman. Business Dynamics: Systems Thinking and Modeling for a Complex World. McGraw-Hill, 2000.

T


6.51 Course: Business Intelligence Systems [T-WIWI-105777]




Responsible: Prof. Dr. Alexander Mädche
Mario Nadj
Peyman Toreini

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101506 - Service Analytics](#)
[M-WIWI-101510 - Cross-Functional Management Accounting](#)
[M-WIWI-103117 - Data Science: Data-Driven Information Systems](#)
[M-WIWI-104068 - Information Systems in Organizations](#)
[M-WIWI-104814 - Information Systems: Analytical and Interactive Systems](#)

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

Events					
WS 20/21	2540422	Business Intelligence Systems	3 SWS	Lecture (V) / 	Mädche
Exams					
SS 2020	7900149	Business Intelligence Systems		Prüfung (PR)	Mädche
WS 20/21	7900224	Business Intelligence Systems		Prüfung (PR)	Mädche

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

Competence Certificate

Alternative exam assessment. The assessment consists of a one-hour exam and the implementation of a Capstone project. Details will be announced at the beginning of the course.

Prerequisites

None

Recommendation

Basic knowledge on database systems is helpful.

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

V

Business Intelligence Systems

2540422, WS 20/21, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)
On-Site

Content

In most modern enterprises, Business Intelligence & Analytics (BI&A) Systems represent a core enabler of decision-making in that they are supplying up-to-date and accurate information about all relevant aspects of a company's planning and operations: from stock levels to sales volumes, from process cycle times to key indicators of corporate performance. Modern BI&A systems leverage beyond reporting and dashboards also advanced analytical functions. Thus, today they also play a major role in enabling data-driven products and services. The aim of this course is to introduce theoretical foundations, concepts, tools, and current practice of BI&A Systems from a managerial and technical perspective.

The course is complemented with an engineering capstone project, where students work in a team with real-world use cases and data in order to create running Business intelligence & Analytics system prototypes.

Learning objectives

- Understand the theoretical foundations of key Business Intelligence & Analytics concepts supporting decision-making
- Explore key capabilities of state-of-the-art Business Intelligence & Analytics Systems
- Learn how to successfully implement and run Business Intelligence & Analytics Systems from multiple perspectives, e.g. architecture, data management, consumption, analytics
- Get hands-on experience by working with Business Intelligence & Analytics Systems with real-world use cases and data

Prerequisites

This course is limited to a capacity of 50 places. The capacity limitation is due to the attractive format of the accompanying engineering capstone project. Strong analytic abilities and profound skills in SQL as well as Python and/or R are required. Students have to apply with their CV and transcript of records.

Literature

- Turban, E., Aronson, J., Liang T.-P., Sharda, R. 2008. "Decision Support and Business Intelligence Systems".
- Watson, H. J. 2014. "Tutorial: Big Data Analytics: Concepts, Technologies, and Applications," Communications of the Association for Information Systems (34), p. 24.
- Arnott, D., and Pervan, G. 2014. "A critical analysis of decision support systems research revisited: The rise of design science," Journal of Information Technology (29:4), Nature Publishing Group, pp. 269–293 (doi: 10.1057/jit.2014.16).
- Carlo, V. (2009). "Business intelligence: data mining and optimization for decision making". Editorial John Wiley and Sons, 308-317.
- Chen, H., Chiang, R. H. L., and Storey, V. C. 2012. „Business Intelligence and Analytics: From Big Data to Big Impact," MIS Quarterly (36:4), pp. 1165-1188.
- Davenport, T. 2014. Big Data @ Work, Boston, MA: Harvard Business Review.
- Economist Intelligence Unit. 2015 "Big data evolution: Forging new corporate capabilities for the long term"
- Power, D. J. 2008. "Decision Support Systems: A Historical Overview," Handbook on Decision Support Systems, pp. 121–140 (doi: 10.1007/978-3-540-48713-5_7).
- Sharma, R., Mithras, S., and Kankanhalli, A. 2014. „Transforming decision-making processes: a research agenda for understanding the impact of business analytics on organisations," European Journal of Information Systems (23:4), pp. 433-441.
- Silver, M. S. 1991. "Decisional Guidance for Computer-Based Decision Support," MIS Quarterly (15:1), pp. 105-122.

Further literature will be made available in the lecture.

T

6.52 Course: Business Models in the Internet: Planning and Implementation [T-WIWI-102639]**Responsible:** Prof. Dr. Christof Weinhardt**Organisation:** KIT Department of Economics and Management

Part of: [M-WIWI-101410 - Business & Service Engineering](#)
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-102806 - Service Innovation, Design & Engineering](#)
[M-WIWI-104813 - Information Systems: Internet-based Markets and Services](#)

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

Events					
SS 2020	2540456	Internet Business Models	2 SWS	Lecture (V)	Peukert, Dann, Dorner
SS 2020	2540457	Übungen zu Geschäftsmodelle im Internet: Planung und Umsetzung	1 SWS	Practice (Ü)	Peukert, Dann

Competence Certificate

Please note that in the summer semester 2020 the exam will only be offered to students who have completed the semester performance but have not yet taken the exam. From summer semester 2021 the exam will be offered again regularly.

Success is monitored through ongoing elaborations and presentations of tasks and a written exam (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.

Successful participation in the exercises is a prerequisite for admission to the written examination.

Prerequisites

None

Recommendation

None

Annotation

Please note that the lecture will not be offered in summer semester 2020 due to the research semester of Prof. Weinhardt.

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

V

Internet Business Models

2540456, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Organizational issues

Diese Veranstaltung findet im Sommersemester 2020 nicht statt (siehe Modulhandbuch)

Literature


Wird in der Vorlesung bekannt gegeben.




T

6.53 Course: Business Planning [T-WIWI-102865]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2020	2545007	Business Planning for Founders	2 SWS	Seminar (S)	Kleinn, Mohammadi, Terzidis
WS 20/21	2545007	Business Planning for Founders (ENTECH)	2 SWS	Seminar (S) / 	Wohlfel, Bauman, Terzidis
Exams					
SS 2020	7900040	Business Planning		Prüfung (PR)	Terzidis
WS 20/21	7900023	Business Planning for Founders		Prüfung (PR)	Terzidis
WS 20/21	7900155	Business Planning for Founders in the field of IT-Security		Prüfung (PR)	Terzidis

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

Competence Certificate

Alternative exam assessment.

Prerequisites

None

Recommendation

None

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

V

Business Planning for Founders

2545007, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content

The seminar introduces students to the basic concepts of business planning for entrepreneurs. On the one hand, this involves concepts for the concretisation of business ideas (business modelling, market potential assessment, resource planning, etc.) and on the other hand, the preparation of an implementable business plan (with or without VC financing). In the course of the seminar, the students are familiarized with methods of further developing patents and business ideas into a more concrete business plan and formulating them in a business plan.

V

Business Planning for Founders (ENTECH)

2545007, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)
Online

Content

The seminar introduces students to the basic concepts of business planning for entrepreneurs. On the one hand, this involves concepts for the concretisation of business ideas (business modelling, market potential assessment, resource planning, etc.) and on the other hand, the preparation of an implementable business plan (with or without VC financing). In the course of the seminar, the students are familiarized with methods of further developing patents and business ideas into a more concrete business plan and formulating them in a business plan.

T**6.54 Course: Business Planning for Founders - EUCOR [T-WIWI-110389]**

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Irregular	1

Competence Certificate

Alternative exam assessment.

Prerequisites

The course can only be combined with the course "International Selling - EUCOR" to be completed. The course is a combination of 6 ECTS, 3 ECTS per part.

T

6.55 Course: Business Strategies of Banks [T-WIWI-102626]

Responsible: Prof. Dr. Wolfgang Müller
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	1

Events					
WS 20/21	2530299	Business Strategies of Banks	2 SWS	Lecture (V) /	Müller
Exams					
SS 2020	7900079	Business Strategies of Banks		Prüfung (PR)	Müller
WS 20/21	7900064	Business Strategies of Banks		Prüfung (PR)	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, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
On-Site

Content

The management of a bank is in charge of the determination and implementation of business policy - taking into account all relevant endogenous and exogenous factors - that assures the bank's success in the long run. In this context, there exists a large body of banking models and theories which are helpful in describing the success and risk of a bank. This course is meant to be the bridging of banking theory and practical implementation. In the course of the lectures students will learn to take on the bank management's perspective.

The first chapter deals with the development of the banking sector. Making use of appropriate assumptions, a banking policy is developed in the second chapter. The design of bank services (ch. 3) and the adequate marketing plan (ch. 4) are then built on this framework. The operational business of banks must be guided by appropriate risk and earnings management (ch. 5 and 6), which are part of the overall (global) bank management (ch. 7). Chapter eight, at last, deals with the requirements and demands of bank supervision as they have significant impact on a bank's corporate policy.

Learning outcomes:

Students are in a position to discuss the principles of commercial banking. They are familiar with fundamental concepts of bank management and are able to apply them.

Workload:

The total workload for this course is approximately 90 hours. For further information see the German version.

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

6.56 Course: Case Studies in Sales and Pricing [T-WIWI-102834]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-105312 - Marketing and Sales Management](#)

Type	Credits	Recurrence	Version
Examination of another type	1,5	Each winter term	3

Competence Certificate

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015). The assessment consists of a group presentation with a subsequent round of questions totalling 30 minutes.

Prerequisites

None

Recommendation

None

Annotation


Please note that the workshop "Case Studies in Sales and Pricing" as well as all other 1.5-ECTS courses will not take place in the winter term 20/21 due to a research semester. The course will probably be offered again starting in WS21/22.




Participation requires an application. The application period starts at the beginning of the semester. More information can be obtained on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu). Access to this course is restricted. Typically all students will be granted the attendance of one course with 1.5 ECTS. Nevertheless attendance can not be guaranteed. For further information please contact Marketing and Sales Research Group (marketing.iism.kit.edu). Please note that only one of the 1.5-ECTS courses can be attended in this module.

T**6.57 Course: Case Studies Seminar: Innovation Management [T-WIWI-102852]**

Responsible: Prof. Dr. Marion Weissenberger-Eibl
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each winter term	1

Events					
WS 20/21	2545105	Case studies seminar: Innovation management	2 SWS	Seminar (S) / 	Weissenberger-Eibl

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

Competence Certificate

Alternative exam assessments (§4(2), 3 SPO).

Prerequisites

None

Recommendation

Prior attendance of the course Innovation Management is recommended.

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

V**Case studies seminar: Innovation management**

2545105, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Blended (On-Site/Online)

Content

The objective of the seminar is to master selected concepts and methods of innovation management and then to apply these practically. Working in groups, the students apply the described concepts and methods of innovation management to a case study from the automotive industry to answer specific questions. Accordingly, the block seminar involves a switch from input to the application of this input. At the end, the results of the group work are presented in the form of a seminar paper and discussed by the whole course. A short introduction to presentation techniques is planned to help students prepare the seminar papers.

Literature

Werden in der ersten Veranstaltung bekannt gegeben.

T

6.58 Course: Challenges in Supply Chain Management [T-WIWI-102872]

Responsible: Esther Mohr
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-102805 - Service Operations](#)
[M-WIWI-102808 - Digital Service Systems in Industry](#)

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

Events					
SS 2020	2550494	Challenges in Supply Chain Management	3 SWS	Lecture (V)	Mohr
Exams					
SS 2020	7900322	Challenges in Supply Chain Management		Prüfung (PR)	Nickel

Competence Certificate

The assessment consists of a written paper and an oral exam of ca. 30-40 min.

Prerequisites

None

Recommendation

Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

Annotation

The number of course participants is limited to 12 participants due to joint work in BASF project teams. Due to these capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The course is offered irregularly. 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

Challenges in Supply Chain Management

2550494, SS 2020, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

The course consists of case studies of BASF which cover future challenges of supply chain management. Thus, the course aims at a case-study based presentation, critical evaluation and exemplary discussion of recent questions in supply chain management. The focus lies on future challenges and trends, also with regard to their applicability in practical cases (especially in the chemical industry).

The main part of the course is working on a project together with BASF in Ludwigshafen. 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 project topic.

This course will include working on cutting edge supply chain topics like Industry 4.0 / "Internet of Everything in production", supply chain analytics, risk management, procurement and production in SCM. The team essays / project reports will be linked to industry-related challenges as well as to upcoming theoretical concepts. The topics of the seminar will be announced at the beginning of the term in a preliminary meeting.

Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

Literature

Wird in Abhängigkeit vom Thema in den Projektteams bekanntgegeben.

T

6.59 Course: Cognitive Systems [T-INFO-101356]

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

Organisation: KIT Department of Informatics

Part of: [M-INFO-100819 - Cognitive Systems](#)

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2020	24572	Kognitive Systeme	4 SWS	Lecture / Practice (VÜ)	Waibel, Stüker, Meißner, Neumann
Exams					
SS 2020	7500157	Cognitive Systems		Prüfung (PR)	Waibel, Neumann
SS 2020	7500305	Cognitive Systems		Prüfung (PR)	Waibel, Dillmann

T

6.60 Course: Competition in Networks [T-WIWI-100005]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101406 - Network Economics](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	3

Exams				
SS 2020	7900274	Competition in Networks	Prüfung (PR)	Mitusch
SS 2020	7900328	Competition in Networks	Prüfung (PR)	Mitusch

Competence Certificate

Result of success is made by a 60 minutes written examination during the semester break (according to §4(2), 1 ERSC). Examination is offered every semester and can be retried at any regular examination date.

Prerequisites

None.

Recommendation

Basics of microeconomics obtained within the undergraduate programme (B.Sc) of economics are required.

Annotation

Due to the research semester of Prof. Mitusch the course will not be offered in the winter semester 20/21. An examination will be offered in each semester.

T**6.61 Course: Computational Cartography [T-INFO-101291]**

Responsible: Dr. Martin Nöllenburg
Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: [M-INFO-100754 - Computational Cartography](#)

Type	Credits	Recurrence	Version
Oral examination	5	Irregular	1

T**6.62 Course: Computational Complexity Theory, with a View Towards Cryptography
[T-INFO-103014]**

Responsible: Prof. Dr. Dennis Hofheinz
Prof. Dr. Jörn Müller-Quade

Organisation: KIT Department of Informatics

Part of: [M-INFO-101575 - Computational Complexity Theory, with a View Towards Cryptography](#)

Type
Oral examination

Credits
6

Recurrence
Irregular

Version
1

T**6.63 Course: Computational Geometry [T-INFO-104429]**


Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [M-INFO-102110 - Computational Geometry](#)





Type
Oral examination

Credits
6

Recurrence
Irregular

Version
2

Events					
WS 20/21	2400083	Computational Geometry	4 SWS	Lecture / Practice (VÜ) / 	Bläsius

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

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

V**Computational Geometry**

2400083, WS 20/21, 4 SWS, Language: German, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

Organizational issues

nur Masterstudiengang Informatik

T

6.64 Course: Computational Risk and Asset Management [T-WIWI-102878]

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-105032 - Data Science for Finance](#)

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

Events					
WS 20/21	2500015	Computational Risk and Asset Management	2 SWS	Lecture (V) / 	Ulrich
Exams					
SS 2020	7900270	Computational Risk and Asset Management	Prüfung (PR)		Ulrich

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

Competence Certificate

The module examination takes the form of an alternative exam assessment.

The alternative exam assessment consists of a Python-based "Takehome Exam". At the end of the third week of January, the student is given a "Takehome Exam" which he processes and sends back independently within 4 hours using Python. Precise instructions will be announced at the beginning of the course. The alternative exam assessment can be repeated a maximum of once. A timely repeat option takes place at the end of the third week in March of the same year. More detailed instructions will be given at the beginning of the course.

Recommendation

Basic knowledge of capital market theory.

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

V

Computational Risk and Asset Management

2500015, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

The course covers several topics, among them:

- Pattern detection in price and return data in equity, interest rate, futures and option markets.
Quantitative Portfolio Strategies
- Modeling Return Densities using tools from financial econometrics, data science and machine learning
- Valuation of equity, fixed-income, futures and options in a coherent framework to possibly exploit arbitrage opportunities
- Neural networks and Natural Language Processing

T

6.65 Course: Computer Architecture [T-INFO-101355]

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

Organisation: KIT Department of Informatics

Part of: [M-INFO-100818 - Computer Architecture](#)

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2020	2424570	Computer structures	3 SWS	Lecture (V)	Karl
Exams					
SS 2020	7500190	Computer Architecture		Prüfung (PR)	Karl

**6.66 Course: Computer Contract Law [T-INFO-102036]**

Responsible: Michael Bartsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101215 - Intellectual Property Law](#)

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	1

Events					
WS 20/21	2411604	Computer Contract Law	2 SWS	Lecture (V) /	Menk
Exams					
SS 2020	7500066	Computer Contract Law		Prüfung (PR)	Dreier, Matz

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

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

**Computer Contract Law**

2411604, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

The course deals with contracts from the following areas:

- Contracts of programming, licencing and maintaining software
- Contracts in the field of IT employment law
- IT projects and IT Outsourcing
- Internet Contracts

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

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

Organizational issues

Die Veranstaltung findet im **WS 2020/2021** in Form eines **Online-Stream live** statt.

Literature

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


Weiterführende Literatur





Ergänzende Literatur wird in den Vorlesungsfolien angegeben.

T**6.67 Course: Computer Graphics [T-INFO-101393]**

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher
Organisation: KIT Department of Informatics
Part of: [M-INFO-100856 - Computer Graphics](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 20/21	24081	Computergrafik	4 SWS	Lecture (V) / 	Schudeiske, Dachsbacher
Exams					
SS 2020	7500257	Computer Graphics		Prüfung (PR)	Dachsbacher





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

T**6.68 Course: Computer Graphics Pass [T-INFO-104313]**

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher
Organisation: KIT Department of Informatics
Part of: [M-INFO-100856 - Computer Graphics](#)


Type	Credits	Recurrence	Version
Completed coursework	0	Each winter term	1





Events					
WS 20/21	24083	Übungen zu Computergrafik	SWS	Lecture / Practice (VÜ) / 	Zirr, Rapp, Schrade

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

T

6.69 Course: Computer Vision for Human-Computer Interaction [T-INFO-101347]**Responsible:** Prof. Dr.-Ing. Rainer Stiefelhagen**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100810 - Computer Vision for Human-Computer Interaction](#)**Type**
Oral examination**Credits**
6**Recurrence**
Each winter term**Version**
1

Events					
WS 20/21	24180	Computer Vision for Human-Computer Interaction	4 SWS	Lecture (V) / 	Stiefelhagen, Sarfraz
Exams					
SS 2020	7500060	Computer Vision for Human-Computer Interaction		Prüfung (PR)	Stiefelhagen
WS 20/21	7500044	Computer Vision for Human-Computer Interaction		Prüfung (PR)	Stiefelhagen

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

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

V

Computer Vision for Human-Computer Interaction24180, WS 20/21, 4 SWS, Language: German, [Open in study portal](#)**Lecture (V)**
Online**Content**

In this lecture current projects of the field of image processing will be presented which deal with the visual perception of persons re. human-computer interaction.

In respect of the individual topics we will discuss various methods and algorithms, their pros and cons and state of the art:

- Face detection and localisation
- Facial expression
- Assessment of head turns and viewing direction
- Person tracking and localisation
- Articulated body tracking
- Gesture recognition
- Audio-visual speech recognition
- Multi-camera environments
- Tools and libraries

The student acquires a basic understanding of computer vision topics within the context of human-computer interaction and learns how to apply them.

Literature**Weiterführende Literatur**

Wissenschaftliche Veröffentlichungen zum Thema, werden auf der VL-Website bereitgestellt.

T

6.70 Course: Context Sensitive Systems [T-INFO-107499]

Responsible: Prof. Dr.-Ing. Michael Beigl

Organisation: KIT Department of Informatics

Part of: [M-INFO-100728 - Context Sensitive Systems](#)

[M-WIWI-104814 - Information Systems: Analytical and Interactive Systems](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each summer term	1

Events					
SS 2020	2400099	Context Sensitive Systems	1 SWS	Practice (Ü)	Riedel
SS 2020	24658	Context Sensitive Systems	2 SWS	Lecture (V)	Riedel, Beigl
Exams					
SS 2020	7500112-03-09	Context Sensitive Systems		Prüfung (PR)	Beigl, Riedel
SS 2020	7500112-05-11	Context Sensitive Systems		Prüfung (PR)	Beigl, Riedel
SS 2020	7500112-15-10	Context Sensitive Systems		Prüfung (PR)	Beigl, Riedel
SS 2020	7500112-23-07	Context Sensitive Systems		Prüfung (PR)	Beigl, Riedel
WS 20/21	7500054_0120	Context Sensitive Systems		Prüfung (PR)	Riedel

T

6.71 Course: Convex Analysis [T-WIWI-102856]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

Competence Certificate

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation.

The examination is held in the semester of the lecture and in the following semester.

Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration for the written examination is subject to fulfilling the prerequisite.

Prerequisites

None

Recommendation

It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

Annotation


The lecture is offered irregularly. The curriculum of the next three years is available online (www.ior.kit.edu).





T

6.72 Course: Copyright [T-INFO-101308]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [M-INFO-101215 - Intellectual Property Law](#)

Type	Credits	Recurrence	Version
Written examination	3	Each term	1


Events					
WS 20/21	24121	Copyright	2 SWS	Lecture (V) / 	Dreier
Exams					
SS 2020	7500064	Copyright		Prüfung (PR)	Dreier, Matz





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

T**6.73 Course: Corporate Compliance [T-INFO-101288]**

Responsible: Andreas Herzig
Organisation: KIT Department of Informatics
Part of: [M-INFO-101242 - Governance, Risk & Compliance](#)

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	1

Events					
WS 20/21	2400087	Corporate Compliance	2 SWS	Lecture (V) / 	Herzig
Exams					
SS 2020	7500063	Corporate Compliance		Prüfung (PR)	Dreier, Matz

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

T

6.74 Course: Corporate Financial Policy [T-WIWI-102622]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)
[M-WIWI-101502 - Economic Theory and its Application in Finance](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2530214	Corporate Finance Policy	2 SWS	Lecture (V)	Ruckes
SS 2020	2530215	Übungen zu Corporate Finance Policy	1 SWS	Practice (Ü)	Ruckes, Hoang
Exams					
SS 2020	7900073	Corporate Financial Policy		Prüfung (PR)	Ruckes
WS 20/21	7900058	Corporate Financial Policy		Prüfung (PR)	Ruckes

Competence Certificate

The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.

The exam is offered each semester.

Prerequisites

None

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

V

Corporate Finance Policy

2530214, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Literature**Weiterführende Literatur**

Tirole, J. (2006): The Theory of Corporate Finance. Princeton University Press.

T

6.75 Course: Corporate Risk Management [T-WIWI-109050]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)
[M-WIWI-101502 - Economic Theory and its Application in Finance](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Exams				
SS 2020	7900259	Corporate Risk Management	Prüfung (PR)	Ruckes
WS 20/21	7900136	Corporate Risk Management	Prüfung (PR)	Ruckes

Competence Certificate

Please note that the lecture will not be offered in summer semester 2020.

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

None

Annotation

The course will exceptionally be held in the winter semester 2019/2020. Usually, however, the event takes place as a block course in the summer semester.

T

6.76 Course: Credit Risk [T-WIWI-102645]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

Type	Credits	Recurrence	Version
Written examination	4,5	see Annotations	1

Exams				
SS 2020	7900113	Credit Risk	Prüfung (PR)	Uhrig-Homburg

Competence Certificate

The examination is offered for first-time writers for the last time in the winter semester 2020/21 and (only) for repeaters in the summer semester 2021.

The assessment consists of a written exam (75 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. The examination is offered every semester and can be repeated at every regular examination date.

A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites

None

Recommendation

Knowledge from the course "Derivatives" is very helpful.

Annotation

The course will no longer be offered from winter semester 2020/21.

T



6.77 Course: Critical Information Infrastructures [T-WIWI-109248]





Responsible: Prof. Dr. Ali Sunyaev

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-104403 - Critical Digital Infrastructures](#)
[M-WIWI-104812 - Information Systems: Engineering and Transformation](#)

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

Events					
WS 20/21	2511400	Critical Information Infrastructures	2 SWS	Lecture (V) / 	Sunyaev, Dehling, Lins
WS 20/21	2511401	Exercises to Critical Information Infrastructures	1 SWS	Practice (Ü) / 	Sunyaev, Dehling, Lins

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

Competence Certificate

The alternative exam assessment consists of

- the preparation of a written elaboration as well as
- an oral examination as part of a presentation of the work.

Details of the grades will be announced at the beginning of the course.

The examination is only offered to first-time students in the winter semester, but can be repeated in the following summer semester.

Prerequisites

None.

Annotation

New lecture from winter semester 2018/2019.

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

V

Critical Information Infrastructures

2511400, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

The course critical information infrastructures (CII) introduces students to the world of complex sociotechnical systems that permeate societies on a global scale. Students will learn to handle the complexities involved in the design, development, operation, and evaluation of critical information infrastructures. In the beginning of the course, critical information infrastructures will be introduced on a general level.

The following sessions will focus on an in-depth exploration of selected cases that represent current challenges in research and practice. Students will work (in a group of 4) on a selected topic and have to write a course paper. Students can choose a topic from a variety of topics. To answer the research questions, students can use literature reviews but also interviews, surveys, programming tasks, and other research methods.

There will be a short introduction to the topics for the course paper in the following topic areas. In addition, it will be possible to propose your own topics as a group in the topic areas:

- Distributed Ledger Technology
- Internet of Things / Edge and Fog Computing
- Cloud Computing
- Health Information Infrastructures
- Information Privacy
- Certification of Critical IT-Services

Since we offer topics in this course that also correspond to the research interests in our research group, there may be the opportunity to work on the topics in more depth in the course of a final thesis.

Learning objectives:

Students know concepts and technologies relevant for the design and reliable operation of critical information infrastructures and can leverage them to develop solutions for real-world challenges.

Notes:

The number of participants is limited to 24 students. Please register via the WiWi portal: <https://portal.wiwi.kit.edu/ys/3853>

The registration will be opened from September 1, 2020 until October 12, 2020.

Please make sure that you are available at the following dates if you want to take the course:

- 11.2020, 11:30 am–01:00 pm: 1. Foundations of Critical Information Infrastructures
- 11.2020, 11:30 am–01:00 pm: 2. Topic Area Presentation
- 11.2020, 11:30 am–01:00 pm: 3. Critical Information Infrastructure Landscape
- 11.2020, 11:30 am–01:00 pm: 4. Research on Information Systems & Group Assignment
- 12.2020, 10:00 am–04:00 pm: Interim Presentation
- 02.2021, 10:00 am–04:00 pm: Final Presentation

Further information on the course structure will be announced in the first session. Depending on the number of participants the individual sessions can have a shorter duration.

The meetings will take place online via MS Teams. We will provide a link to join the team if your registration was approved.

If you have any questions regarding course registration, please contact lins@kit.edu or dehling@kit.edu

Organizational issues

Bitte beachten Sie die geänderte Terminplanung. Die Vorlesung wird als Blockveranstaltung durchgeführt.

Literature

Dehling T., Lins S., Sunyaev A. (2019) Security of Critical Information Infrastructures. In: Reuter C. (eds) Information Technology for Peace and Security. Springer Vieweg, Wiesbaden. https://doi.org/10.1007/978-3-658-25652-4_15

T**6.78 Course: Cryptographic Voting Schemes [T-INFO-101279]**

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: [M-INFO-100742 - Cryptographic Voting Schemes](#)





Type
Oral examination

Credits
3

Recurrence
Irregular

Version
1

Events					
WS 20/21	2400122	Cryptographic Voting Schemes	2 SWS	Lecture (V) / 	Müller-Quade, Schwerdt, Dörre

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

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

V**Cryptographic Voting Schemes**

2400122, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

T**6.79 Course: Current Directions in Consumer Psychology [T-WIWI-111100]**

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-105312 - Marketing and Sales Management](#)

Type
Examination of another type

Credits
3

Recurrence
Once

Expansion
1 terms

Version
1

Events					
WS 20/21	2540441	Current Directions in Consumer Psychology	SWS	Others (sonst.)	Scheibehenne

Competence Certificate

Non exam assessment. Grading will be based on a continuous basis throughout the semester.

Prerequisites

Strong Interest in Original Research.

T

6.80 Course: Current Issues in Innovation Management [T-WIWI-102873]

Responsible: Prof. Dr. Marion Weissenberger-Eibl
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Irregular	1

Competence Certificate

Non exam assessment (following §4(2) 3 of the examination regulation).

Prerequisites

None

Recommendation

None

Annotation

Please note that the seminars we offer vary from semester to semester. Information about the currently offered seminars can be found in the Wiwi-Portal and on the iTM Website.




T

6.81 Course: Curves and Surfaces for Geometric Design II [T-INFO-102041]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101231 - Curves and Surfaces for Geometric Design](#)

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

Events					
WS 20/21	24175	Curves and Surfaces in CAD II	2+1 SWS	Lecture / Practice (VÜ) / 	Prautzsch

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

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

V

Curves and Surfaces in CAD II

24175, WS 20/21, 2+1 SWS, Language: German/English, [Open in study portal](#)

Lecture / Practice (VÜ)
 Blended (On-Site/Online)

Content

Bézier-and B-spline techniques, constructive algorithms, underlying geometric structures, as described in the book "Bézier-and B-spline techniques".

The first part of the course covers curves and tensor product surfaces, the second is on constructions of smooth free form surfaces. Rational, focal and homogenous curves and surfaces are also discussed in both parts.

Literature

Prautzsch, Boehm, Paluszny: Bézier and B-Spline Techniques, Springer 2002.

Farin: Curves and Surfaces for CAGD, Fifth Edition, 2002.

T

6.82 Course: Curves and Surfaces in CAD I [T-INFO-101374]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-100837 - Curves and Surfaces in CAD I](#)





Type
Oral examination

Credits
5

Recurrence
Irregular

Version
1

Events					
WS 20/21	2400056	Curves and Surfaces in CAD I	2+1 SWS	Lecture / Practice (VÜ) / 	Prautzsch

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

T**6.83 Course: Curves and Surfaces in CAD II [T-INFO-102006]**

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101213 - Curves and Surfaces in CAD III](#)





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

T**6.84 Course: Data and Storage Management [T-INFO-101276]**

Responsible: Prof. Dr. Bernhard Neumair
Organisation: KIT Department of Informatics
Part of: [M-INFO-100739 - Data and Storage Management](#)

Type	Credits	Recurrence	Version
Oral examination	4	Each winter term	1

Events					
WS 20/21	24074	Data and Storage Management	2 SWS	Lecture (V) / 	Neumair

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

T

6.85 Course: Data Mining and Applications [T-WIWI-103066]

Responsible: Rheza Nakhaeizadeh
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101638 - Econometrics and Statistics I](#)
[M-WIWI-101639 - Econometrics and Statistics II](#)
[M-WIWI-105414 - Statistics and Econometrics II](#)

Type	Credits	Recurrence	Version
Oral examination	4,5	Each summer term	2

Events					
SS 2020	2520375	Data Mining and Applications	2/4 SWS	Lecture (V)	Nakhaeizadeh
Exams					
SS 2020	7900102	Data Mining and Applications (Lecture)		Prüfung (PR)	Nakhaeizadeh

Competence Certificate

- Conduction of a larger empirical study in groups
- reporting of milestones
- final presentation (app. 45 minutes)

Prerequisites

None

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

V

Data Mining and Applications

2520375, SS 2020, 2/4 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content**Learning objectives:**

Students

- know the definition of Data Mining
- are familiar with the CRISP-DM
- are familiar with the most important Data Mining Algorithms like Decision Tree, K-Means, Artificial Neural Networks, Association Rules, Regression Analysis
- will be able to use a DM-Tool

Content:

Part one: Data Mining:

What is Data Mining?; History of Data Mining; Conferences and Journals on Data Mining; Potential Applications; Data Mining Process; Business Understanding; Data Understanding; Data Preparation; Modeling; Evaluation; Deployment; Interdisciplinary aspects of Data Mining; Data Mining tasks; Data Mining Algorithms (Decision Trees, Association Rules, Regression, Clustering, Neural Networks); Fuzzy Mining; OLAP and Data Warehouse; Data Mining Tools; Trends in Data Mining

Part two: Examples of application of Data Mining

Success parameters of Data Mining Projects; Application in industry; Application in Commerce

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Exam preparation: 40 hours

Organizational issues

Blockveranstaltung, Termine werden über ILIAS bekannt gegeben

Literature

U. Fayyad, G. Piatetsky-Shapiro, P. Smyth, R. Uthurusamy, editors, Advances in Knowledge Discovery and Data Mining, AAAI/MIT Press, 1996 (order online from Amazon.com or from MIT Press).

Jiawei Han, Micheline Kamber, Data Mining : Concepts and Techniques, 2nd edition, Morgan Kaufmann, ISBN 1558609016 , 2006.

David J. Hand, Heikki Mannila and Padhraic Smyth, Principles of Data Mining , MIT Press, Fall 2000

Trevor Hastie, Robert Tibshirani, Jerome Friedman, The Elements of Statistical Learning: Data Mining, Inference, and Prediction, Springer Verlag, 2001.

Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, Pearson Addison wesley (May, 2005). Hardcover: 769 pages. ISBN: 0321321367

Ripley, B.D. (1996) Pattern Recognition and Neural Networks, Cambridge: Cambridge University Press.

Ian Witten and Eibe Frank, Data Mining: Practical Machine Learning Tools and Techniques, 2nd Edition, Morgan Kaufmann, ISBN 0120884070 , 2005.

T

6.86 Course: Data Privacy: From Anonymization to Access Control [T-INFO-108377]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-104045 - Data Privacy: From Anonymization to Access Control](#)

Type	Credits	Recurrence	Version
Written examination	3	Irregular	1

Exams				
SS 2020	7500332	Data Privacy: From Anonymization to Access Control	Prüfung (PR)	Böhm

T**6.87 Course: Data Protection by Design [T-INFO-108405]**

Responsible: apl. Prof. Dr. Oliver Raabe
Organisation: KIT Department of Informatics
Part of: [M-INFO-101242 - Governance, Risk & Compliance](#)


Type	Credits	Recurrence	Version
Written examination	3	Irregular	2





Exams				
SS 2020	7500223	Data protection by design	Prüfung (PR)	Raabe

T**6.88 Course: Data Protection Law [T-INFO-101303]**

Responsible: Dr. Johannes Eichenhofer
Organisation: KIT Department of Informatics
Part of: [M-INFO-101217 - Public Business Law](#)

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	1

Events					
WS 20/21	24018	Datenschutzrecht	2 SWS	Lecture (V) / 	Eichenhofer
Exams					
SS 2020	7500083	Data Protection Law		Prüfung (PR)	Eichenhofer
SS 2020	7500291	Data Protection Law		Prüfung (PR)	Eichenhofer



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





T

6.89 Course: Database Systems and XML [T-WIWI-102661]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101456 - Intelligent Systems and Services](#)
[M-WIWI-101477 - Development of Business Information Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 20/21	2511202	Database Systems and XML	2 SWS	Lecture (V) / 	Oberweis
WS 20/21	2511203	Exercises Database Systems and XML	1 SWS	Practice (Ü) / 	Oberweis, Frister, Forell, Schreiber, Fritsch
Exams					
SS 2020	7900046	Database Systems and XML (Registration until 13 July 2020)	Prüfung (PR)		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

Database Systems and XML

2511202, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

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

Learning objectives:

Students

- know the basics of XML and generate XML documents,
- are able to use XML database systems and to formulate queries to XML documents,
- know to assess the use of XML in operational practice in different application contexts.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

Literature

- M. Klettke, H. Meyer: XML & Datenbanken: Konzepte, Sprachen und Systeme. dpunkt.verlag 2003
- H. Schöning: XML und Datenbanken: Konzepte und Systeme. Carl Hanser Verlag 2003
- W. Kazakos, A. Schmidt, P. Tomchyk: Datenbanken und XML. Springer-Verlag 2002
- R. Elmasri, S. B. Navathe: Grundlagen der Datenbanksysteme. 2009
- G. Vossen: Datenbankmodelle, Datenbanksprachen und Datenbankmanagementsysteme. Oldenbourg 2008

Weitere Literatur wird in der Vorlesung bekannt gegeben.

T**6.90 Course: Datamanagement in the Cloud [T-INFO-101306]**

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-100769 - Datamanagement in the Cloud](#)

Type
Oral examination

Credits
5

Recurrence
Irregular

Version
1

Prerequisites
none

T**6.91 Course: Decentralized Systems: Fundamentals, Modeling, and Applications [T-INFO-110820]****Responsible:** Prof. Dr. Hannes Hartenstein**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-105334 - Decentralized Systems: Fundamentals, Modeling, and Applications](#)

Type	Credits	Recurrence	Version
Oral examination	4	Each summer term	1

Events					
SS 2020	2400089	Decentralized Systems: Fundamentals, Modeling, and Applications	2 SWS	Lecture (V)	Hartenstein, Stengele, Grundmann
Exams					
SS 2020	7500284	Decentralized Systems: Fundamentals, Modeling, and Applications		Prüfung (PR)	Hartenstein

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

V**Decentralized Systems: Fundamentals, Modeling, and Applications**2400089, SS 2020, 2 SWS, Language: English, [Open in study portal](#)**Lecture (V)**

Content

Decentralized Systems (like blockchain-based systems) represent distributed systems that are controlled by multiple parties who make their own independent decisions. In this course, we cover fundamental theoretical aspects as well as up-to-date decentralized systems and connect theory with current practice. We thereby address fault tolerance, security & trust, as well as performance aspects. Furthermore, we address measurements, modeling and simulation of decentralized systems and applications like Bitcoin and Matrix.

Prior knowledge in Foundations of IT-Security and Computer Networks is recommended.

Amount of Work

Lecture: 15 x 2h = 30h

Weekly lecture preparation and follow-up: 15 x 2 x 2h = 60h

Exam preparation: 30h

120h = 4 ECTS

Learning Objectives

1. Theoretic Fundamentals
 1. The student is able to recognize and distinguish distributed, federated, and decentralized systems.
 2. The student understands consensus, consistency and coordination within the context of networked and decentralized systems.
 3. The student understands the formally proven limits of fault tolerance and their underlying assumptions. This includes an understanding of the synchronous and asynchronous network model which underpin the respective proofs. The student also understands several models for fault tolerance, notably silent and noisy crash as well as byzantine fault tolerance within the context of decentralized and distributed systems.
 4. The student knows various models for and levels of consistency. In particular, strictly ordered, causally ordered, partially ordered consistency as well as numerical and temporal relaxations thereof.
2. Modeling & Simulation
 1. The student understands discrete event-based simulation as a scientific tool and is able to apply this concept properly to examine networked and decentralized systems.
 2. The student understands the generation, manipulation, and evaluation of randomness and its relevance to simulation of networked and decentralized systems.
 3. The student is able to statistically evaluate, visualize, and interpret the results of simulations.
3. Applications
 1. The student has a fundamental understanding of blockchain-based cryptocurrencies (e.g. Bitcoin/Ethereum), decentralized communication systems like Matrix, and understands trust relations in distributed and decentralized systems.


The student is able to understand how the previously introduced theoretical foundations relate to networked and decentralized systems in practice.





Organizational issues**Information on Online Teaching During the COVID-19 Pandemic**

We plan to offer a synchronous lecture via video conferencing taking place on Thursdays, 2:00pm. We are currently in the process of selecting a proper tele-conferencing tool. Our plan currently is to use either Microsoft Teams as offered by the SCC or Zoom. The live stream will be recorded and the recordings will be offered for download. Please be aware that your voice may be recorded, too.

Information on the tele-conferencing tool and possible changes to these plans will be posted to the respective ILIAS course. **The ILIAS course of the lecture can be entered without password during the first weeks of lectures.**

T**6.92 Course: Decision Procedures with Applications to Software Verification [T-INFO-108955]****Responsible:** Prof. Dr. Carsten Sinz**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-104381 - Decision Procedures with Applications to Software Verification](#)**Type**
Oral examination**Credits**
5**Recurrence**
Each winter term**Version**
1

Events					
WS 20/21	2400073	Decision Procedures with Applications to Software Verification	3 SWS	Lecture / Practice (VÜ) / 	Sinz

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

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

V**Decision Procedures with Applications to Software Verification**2400073, WS 20/21, 3 SWS, Language: German, [Open in study portal](#)**Lecture / Practice (VÜ)
Online****Content**

In this lecture we will present decision procedures that are used in software verification.

Such decision procedures are typically implemented in SMT solvers.

T**6.93 Course: Deep Learning and Neural Networks [T-INFO-109124]**

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: [M-INFO-104460 - Deep Learning and Neural Networks](#)

Type
Written examination

Credits
6

Recurrence
Each summer term

Version
1

Events					
SS 2020	2400024	Deep Learning and Neural Networks	4 SWS	Lecture (V)	Waibel, Pham
Exams					
SS 2020	7500044	Deep Learning and Neural Networks		Prüfung (PR)	Waibel

T

6.94 Course: Deep Learning for Computer Vision [T-INFO-109796]

Responsible: Prof. Dr.-Ing. Rainer Stiefelhagen
Organisation: KIT Department of Informatics
Part of: [M-INFO-104099 - Deep Learning for Computer Vision](#)

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	1

Events					
SS 2020	24628	Deep Learning for Computer Vision	2 SWS	Lecture (V)	Stiefelhagen, Sarfraz
Exams					
SS 2020	7500024	Deep Learning for Computer Vision		Prüfung (PR)	Stiefelhagen

Recommendation

Basic knowledge of pattern recognition as taught in the module Cognitive Systems, is expected.

Annotation

The course is partially given in German and English.

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

V

Deep Learning for Computer Vision

24628, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

In recent years tremendous progress has been made in analysing and understanding image and video content. The dominant approach in Computer Vision today are deep learning approaches, in particular the usage of Convolutional Neural Networks.

The lecture introduces the basics, as well as advanced aspects of deep learning methods and their application for a number of computer vision tasks. The following topics will be addressed in the lecture:

- Introduction to Deep Learning
- Convolutional Neural Networks (CNN): Background
- CNNs: basic architectures and learning algorithms
- Object Recognition with CNN
- Image Segmentation with CNN
- Recurrent Neural Networks
- Generating image descriptions (Image Captioning)
- Automatic question answering (Visual Question Answering)
- Generative Adversarial Networks (GAN) and their applications
- Deep Learning platforms and tools

T**6.95 Course: Demand-Driven Supply Chain Planning [T-WIWI-110971]**

Responsible: Josef Packowski
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-102805 - Service Operations](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Competence Certificate

The assessment consists of a written exam.

Annotation

Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course. The course is planned to be held every winter term. The planned lectures and courses for the next three years are announced online.

T

6.96 Course: Deployment of Database Systems [T-INFO-101317]


Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-100780 - Deployment of Database Systems](#)
[M-WIWI-104814 - Information Systems: Analytical and Interactive Systems](#)





Type
Oral examination

Credits
5

Recurrence
Each winter term

Version
1

Events					
WS 20/21	2400020	Datenbankeinsatz	3 SWS	Lecture (V) / 	Böhm
Exams					
SS 2020	7500090	Deployment of Database Systems	Prüfung (PR)		Böhm
SS 2020	7500271	Deployment of Database Systems	Prüfung (PR)		Schäler

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

T

6.97 Course: Derivatives [T-WIWI-102643]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101482 - Finance 1](#)
[M-WIWI-101483 - Finance 2](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2530550	Derivatives	2 SWS	Lecture (V)	Uhrig-Homburg, Thimme
SS 2020	2530551	Übung zu Derivate	1 SWS	Practice (Ü)	Uhrig-Homburg, Eska
Exams					
SS 2020	7900111	Derivatives		Prüfung (PR)	Uhrig-Homburg

Competence Certificate

The assessment takes place in the form of a written examination (75 minutes) according to §4(2), 1 SPO. The examination takes place during the semester break. The examination is offered every semester and can be repeated at any regular examination date. A bonus can be acquired through successful participation in the exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites

None

Recommendation

None

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

V

Derivatives2530550, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature


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





Weiterführende Literatur:

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

T

6.98 Course: Design and Architectures of Embedded Systems (ES2) [T-INFO-101368]**Responsible:** Prof. Dr.-Ing. Jörg Henkel**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100831 - Design and Architectures of Embedded Systems \(ES2\)](#)**Type**
Oral examination**Credits**
3**Recurrence**
Each winter term**Version**
1

Events					
WS 20/21	2424106	Design and architectures of embedded systems (ES2)	2 SWS	Lecture (V) / 	Henkel, Khdr
Exams					
SS 2020	7500037	VL: Design and architectures of embedded systems (ES2)		Prüfung (PR)	Henkel
WS 20/21	7500124	VL: Design and architectures of embedded systems (ES2)		Prüfung (PR)	Henkel

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

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

V

Design and architectures of embedded systems (ES2)2424106, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)**Lecture (V)**
On-Site**Content**

State-of-the-art System-on-Chips (SoCs) integrate more than a billion transistors on a single chip. Embedded devices powered by these SoCs would be increasingly ubiquitous and seamlessly integrated into the environment. Therefore they will no longer be perceived as separate computing devices. Such examples can be found in Wireless Sensor Networks (WSNs), Cyber Physical Systems (CPSs), electronic textiles and many more.

However, new efficient ESL (Embedded System Level) design tools as well as novel hardware-software architectures must be developed in order to enable embedded devices to achieve their true potential. The focus of this lecture is therefore on the high-level design methods and architectures for embedded systems. Since the power consumption of embedded systems is of paramount importance, this lecture emphasizes on hardware-software co-design procedures targeting low power consumption.

Due to the recent advancements in technology, it is now possible to integrate several billion transistors on a single SoC. The trend to add more and more transistors to the SoC continues unabated and leads to multi-fold increase in the SoC's complexity and capabilities. Embedded devices powered by these SoCs would be increasingly ubiquitous and seamlessly integrated into the environment. Therefore they will no longer be perceived as separate computing devices. Such examples can be found in Wireless Sensor Networks (WSNs), Cyber Physical Systems (CPSs), electronic textiles and many more.

However, new efficient ESL (Embedded System Level) design tools as well as novel hardware-software architectures must be developed in order to enable embedded devices to achieve their true potential. The focus of this lecture is therefore on the high-level design methods and architectures for embedded systems. Since the power consumption of embedded systems is of paramount importance, this lecture emphasizes on hardware-software co-design procedures targeting low power consumption.

Appointments for the oral exam can be requested at exam-ces@ira.uka.de.

The student learns complex hardware-software co-design methods that can be applied to the design of embedded systems. The student assesses and selects specific hardware-software architecture most suitable for an embedded system given its function. Furthermore, the student receives an introduction to the relevant current research topics.

Literature

"Embedded System Design", F. Vahid, John Wiley&Sons, 2002.

"Embedded System Design", P. Marwedel, Kluwer, 2003.

"The Electronic Design Automation Handbook", D. Jansen (Eds.), 2003.

"System Design: A practical guide with SpecC", A. Gerstlauer et al., Kluwer, 2001.

"Computers as Components", W. Wolf, Morgan Kaufmann, 2001.

"Code Optimization for Embedded Systems", R. Leupers et al., Kluwer, 2001.

Weitere Literatur wird in den jeweiligen Vorlesungen genannt.

T

6.99 Course: Design Principles for Interactive Real-Time Systems [T-INFO-101290]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: [M-INFO-100753 - Design Principles for Interactive Real-Time Systems](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	1


Events					
SS 2020	24648	Design Principles for Interactive Real-Time Systems	2 SWS	Lecture (V)	Peinsipp-Byma, Sauer
Exams					
SS 2020	7500030	Design Principles for Interactive Real-Time Systems		Prüfung (PR)	Beyerer, Sauer, Peinsipp-Byma
WS 20/21	7500098	Design Principles for Interactive Real-Time Systems		Prüfung (PR)	Beyerer, Sauer, Peinsipp-Byma





T

6.100 Course: Design Thinking [T-WIWI-102866]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2020	2545008	Design Thinking (Track 1)	2 SWS	Seminar (S)	Terzidis, González, Abraham
WS 20/21	2545008	Design Thinking (Track 1)	2 SWS	Seminar (S) / 	Abraham, Manthey, Terzidis
Exams					
SS 2020	7900053	Design Thinking (Track 1)		Prüfung (PR)	Terzidis
WS 20/21	7900084	Design Thinking (Track 1)		Prüfung (PR)	Terzidis

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

Competence Certificate

Alternative exam assessments (§4(2), 3 SPO).

Prerequisites

None

Recommendation

None

Annotation

The seminar content will be published on the website of the institute.

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

V

Design Thinking (Track 1)

2545008, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

Design Thinking is a user-centric innovation management method. The iterative process first analyzes the problem space and builds a sound understanding of the future users. Subsequently, ideas for the solution are generated, prototypes are created and tested by the user group. The result is a proven and validated product.

Learning goals:

During the seminar, the students learn basic procedures for achieving user-centric innovations. These are concrete methods that start with the potential user of certain products and services. The method is problem-oriented and emphasizes the specific customer situation. After attending the seminar, the students have a clear understanding of the need to explore end-user needs and are able to independently apply the methods of Design Thinking for developing market-driven innovations at a basic level.

Credentials:

Registration is via the Wiwi portal.

ATTENTION: Creditability in the seminar module: The seminar is NOT credited in the seminar module! Crediting is only possible in the EXPERT MODULE ENTREPRENEURSHIP.

T

6.101 Course: Designing Interactive Systems [T-WIWI-110851]

Responsible: Ulrich Gnewuch
Prof. Dr. Alexander Mädche

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-104068 - Information Systems in Organizations](#)
[M-WIWI-104080 - Designing Interactive Information Systems](#)
[M-WIWI-104814 - Information Systems: Analytical and Interactive Systems](#)

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

Events					
SS 2020	2540558	Designing Interactive Systems	3 SWS	Lecture (V)	Mädche, Gnewuch , Benke
Exams					
SS 2020	00010	Designing Interactive Systems		Prüfung (PR)	Mädche

Competence Certificate

Alternative exam assessment. The assessment consists of a one-hour exam and the implementation of a Capstone project. Details will be announced at the beginning of the course.

Prerequisites

None

Annotation

This course replaces T-WIWI-108461 "Interactive Information Systems" starting summer term 2020.

The course is held in english.

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

V

Designing Interactive Systems

2540558, SS 2020, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content**Description**

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.

The aim of this course is to introduce advanced concepts and theories, interaction technologies as well as current practice of contemporary interactive systems.

The course is complemented with a design capstone project, where students in a team select and apply design methods & techniques in order to create an interactive prototype

Learning objectives

- Get an advanced understanding of conceptual foundations of interactive systems from a human and computer perspective
- explore the theoretical grounding of Interactive Systems leveraging theories from reference disciplines such as psychology
- know specific design principles for the design of advanced interactive systems
- get hands-on experience in conceptualizing and designing advanced Interactive Systems to solve a real-world challenge from an industry partner by applying the lecture contents.

Prerequisites

No specific prerequisites are required for the lecture

Literature

Die Vorlesung basiert zu einem großen Teil auf

• Benyon, D. (2014). Designing interactive systems: A comprehensive guide to HCI, UX and interaction design (3. ed.). Harlow: Pearson.

Weiterführende Literatur wird in der Vorlesung bereitgestellt.

T

6.102 Course: Developing Business Models for the Semantic Web [T-WIWI-102851]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Irregular	1

Competence Certificate

Alternative exam assessments.

Prerequisites


None





Recommendation

As a recommendation to attending the seminar, basic knowledge about semantic technologies and concepts should be available. This may be acquired by attending one of the following lectures – Wissensmanagement, Semantic Web Technologies 1, Semantic Web Technologies 2 or by studying related literature. Furthermore the topic entrepreneurship should be of interest.

T**6.103 Course: Digital Health [T-WIWI-109246]****Responsible:** Prof. Dr. Ali Sunyaev**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-104403 - Critical Digital Infrastructures](#)
[M-WIWI-104813 - Information Systems: Internet-based Markets and Services](#)

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each winter term	3

Events					
WS 20/21	2511402	Digital Health	2 SWS	Lecture (V) / 	Sunyaev, Thiebes, Schmidt-Kraepelin

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

Alternative exam assessment (written elaboration, presentation, peer review, oral participation) according to §4(2),3 of the examination regulation. Details of the grading will be announced at the beginning of the course. The examination is only offered to first-time writers in the winter semester, but can be repeated in the following summer semester.

Prerequisites

None.

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

V**Digital Health**2511402, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)**Lecture (V)
Online**

Content

The master course **Digital Health** introduces master students to the subject of **digitization in health care**. Students will learn about the theoretical foundations and practical implications of various topics surrounding the digitization in health care, including health information systems, telematics, big health care data, and patient-centered health care.

After an introduction to the challenge of digitization in health care, the following sessions will focus on an in-depth exploration of selected cases that represent current challenges in research and practice. Students will work (in a group of 3-4) on a selected topic and have to write a course paper. Students can choose a topic from a variety of topics. To answer the research questions, students can use literature reviews but also interviews, surveys, programming tasks, and other research methods are possible.

There will be a short introduction to the topics for the course paper in the following topic areas. In addition, it will be possible to propose your own topics as a group in the topic areas:

- **Mobile Health (mHealth) / Gamification**
- **Distributed Ledger Technology / Blockchain**
- **Artificial Intelligence / Machine Learning**
- **Genomics / Biomedical Data**

Since we offer topics in this course that also correspond to the research interests in our research group, there may be the opportunity to work on the topics in more depth in the course of a final thesis.

Learning objectives:

Students know about the challenges of digitization in health care and can leverage relevant concepts and technologies to address these challenges. Students learn to work in teams and critically discuss digital health topics with fellow students, researchers, and practitioners.

Notes:

The number of participants is limited to 24 students. Please register here: <https://portal.wiwi.kit.edu/ys/3897>

The registration will be opened from September 11, 2020 until October 12, 2020.

Please make sure that you are available at the following dates if you want to take the course:

- 11.2020, 15:45–17:15 - 1. Introduction to Digital Health
- 11.2020, 15:45–17:15 - 2. Topic Area Presentation #1
- 11.2020, 15:45–17:15 - 3. Topic Area Presentation #2
- 11.2020, 15:45–17:15 - 4. Topic Area Presentation #3
- 02.2021, 10:00–17:00 - Final Presentation

Further information on the course structure will be announced in the first session. Depending on the number of participants the individual sessions can have a shorter duration.

The meetings will take place **online via MS Teams**. We will provide a link to join the team if your registration was approved.

If you have any questions regarding course registration, please contact scott.thiebes@kit.edu or manuel.schmidt-kraepelin@kit.edu

Workload:

4,5 ECTS = approx. 135 hours.

Organizational issues

Bitte beachten Sie die geänderte Terminplanung und das geänderte Anmeldeverfahren (<https://portal.wiwi.kit.edu/ys/3897>)

T

6.104 Course: Digital Marketing and Sales in B2B [T-WIWI-106981]

Responsible: Anja Konhäuser
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-105312 - Marketing and Sales Management](#)

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

Competence Certificate

Alternative exam assessment according to § 4 paragraph 2 Nr. 3 of the examination regulation. (team presentation of a case study with subsequent discussion totalling 30 minutes).

Prerequisites

None.



Annotation





Please note that the workshop "Digital Marketing and Sales in B2B" as well as all other 1.5-ECTS courses will not take place in the winter term 20/21 due to a research semester. The course will probably be offered again starting in WS21/22.

Participation requires an application. The application period starts at the beginning of the semester. More information can be obtained on the website of the research group Marketing and Sales (marketing.iism.kit.edu). Access to this course is restricted. Typically all students will be granted the attendance of one course with 1.5 ECTS. Nevertheless attendance can not be guaranteed. For further information please contact Marketing and Sales Research Group (marketing.iism.kit.edu). Please note that only one of the 1.5-ECTS courses can be attended in this module.

T

6.105 Course: Digital Services: Business Models and Transformation [T-WIWI-110280]**Responsible:** Prof. Dr. Gerhard Satzger**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-101448 - Service Management](#)[M-WIWI-102754 - Service Economics and Management](#)[M-WIWI-102808 - Digital Service Systems in Industry](#)[M-WIWI-104813 - Information Systems: Internet-based Markets and Services](#)**Type**
Written examination**Credits**
4,5**Recurrence**
Each winter term**Version**
1

Events					
WS 20/21	2595484	Digital Services: Business Models and Transformation	2 SWS	Lecture (V) / 	Satzger, Schüritz
WS 20/21	2595485		1 SWS	Practice (Ü) / 	Enders, Schüritz
Exams					
SS 2020	7900258	Digital Services: Business Models and Transformation		Prüfung (PR)	Satzger
SS 2020	7900337	Digital Services: Business Models and Transformation		Prüfung (PR)	Satzger

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

The assessment of this course is a written examination (60 min.) (following §4(2), 1 SPOs) and by submitting written papers as part of the exercise.

Prerequisites

None

Recommendation

None

Annotation

former name until winter semester 2019/2020: "Business and IT Service Management" (T-WIWI-102881)

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

V

Digital Services: Business Models and Transformation2595484, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)**Lecture (V)**
Online

Content

Digitalization fuels the trends towards a service-led economy and drives the emergence of innovative digital services, but also new service-oriented offerings of existing enterprises ("servitization"). In particular, the use of new data resources (e.g., sensor-based data in the Internet of Things) and analytical methods open up ample opportunities for new data-driven services and associated novel business models.

In this lecture, we systematically build the theoretical and practical foundations on how to adapt, create and transform business models around digital services – using a top-down approach: The first part of the lecture is devoted to *general service* theory, management and transformation as a base for digital service businesses. The second and third part of the lecture then further zoom in into the specifics of *digital service* and *data-based service* business models and their transformation. Throughout the lecture, we put a particular focus on service systems – elevating the service and business model perspective from individual enterprises to larger "(eco-)systems" or "platforms".

The lecture links theoretical content and current research to practical examples and exercises. Students are invited to actively engage in the discussion and contribute their knowledge. Invited guest speakers from industry as well as case studies ensure sufficient application orientation of this lecture.

Note: While the lecture builds upon aspects of the "Digital Service" lecture in the bachelor program, it is not mandatory for students to have participated in it.

Literature

Böhmman, T., Leimeister, J.M., Möslin, K. (2014). Service Systems Engineering, Business & Information Systems Engineering, 6(2), 73-79.

Cardoso et al. (2015). Fundamentals of Service Systems.

Hartmann P., Zaki M., Feldmann N., Neely A. (2016). Capturing value from big data - a taxonomy of data-driven business models used by start-up firms. IJPOR, 36(10), 1382-1406.

Schüritz R., Seebacher S., Satzger G., Schwartz L. (2017). Datatization as the Next Frontier of Servitization. Proceedings of International Conference on Information Systems 2017.

Vargo S., Lusch R. (2017). Service-dominant logic 2025. International Journal of Research in Marketing, 34(1), 46-67.

Weill, P., Woerner, S.L. (2018). What's your Digital Business Model? – Six Questions to Help you Build the Next-Generation Enterprise. Harvard Business Review Press.

Wirtz, B. (2019). Digital Business Models – Concepts, Models, and the Alphabet Case Study. Springer.

T

6.106 Course: Digital Transformation and Business Models [T-WIWI-108875]

Responsible: Dr. Daniel Jeffrey Koch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each summer term	1

Events					
SS 2020	2545103	Digital Transformation and Business Models	2 SWS	Seminar (S)	Koch
Exams					
SS 2020	7900284	Digital Transformation and Business Models	Prüfung (PR)		Weissenberger-Eibl

Competence Certificate

Non exam assessment (following §4(2) 3 of the examination regulation). The final grade is composed 75% of the grade of the written paper and 25% of the presentation.

Prerequisites

None

Recommendation

Prior attendance of the course Innovation Management is recommended.

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

V

Digital Transformation and Business Models

2545103, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content

The seminar "Digital Transformation and Business Models" aims at the development of thematic aspects of digital transformation with simultaneous application of different business model methodologies. Established companies face the challenge of digital transformation. The digital transformation is particularly relevant for the business models of industrial enterprises. As part of innovation management, the examination of business model changes against the background of digital transformation is one of the main challenges facing the German economy. At the beginning, seminar topics will be assigned. These will be presented and discussed at the end of the seminar. In the first seminar date impulses to business model methodologies and the digital transformation take place, which are to be discussed then, in order to provide an understanding for the topic complex and to ensure the purposeful development of the seminar topics.

T

6.107 Course: Discrete-Event Simulation in Production and Logistics [T-WIWI-102718]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-102805 - Service Operations](#)
[M-WIWI-102832 - Operations Research in Supply Chain Management](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2550488	Ereignisdiskrete Simulation in Produktion und Logistik	3 SWS	Lecture (V)	Spieckermann
Exams					
SS 2020	7900248	Discrete-Event Simulation in Production and Logistics		Prüfung (PR)	Nickel

Competence Certificate

The assessment consists of a written paper and an oral exam of about 30-40 min (alternative exam assessment).

Prerequisites

None

Recommendation

Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

Annotation

Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The course is planned to be held every summer term.

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

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

V

Ereignisdiskrete Simulation in Produktion und Logistik

2550488, SS 2020, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

Simulation of production and logistics systems is an interdisciplinary subject connecting expert knowledge from production management and operations research with mathematics/statistics as well as computer science and software engineering. With completion of this course, students know statistical foundations of discrete simulation, are able to classify and apply related software applications, and know the relation between simulation and optimization as well as a number of application examples. Furthermore, students are enabled to structure simulation studies and are aware of specific project scheduling issues.

Literature


- Banks J., Carson II J. S., Nelson B. L., Nicol D. M. (2010) Discrete-event system simulation, 5.Aufl., Pearson, Upper Saddle River.
- Eley, M. (2012): Simulation in der Logistik - Einführung in die Erstellung ereignisdiskreter Modelle unter Verwendung des Werkzeuges "Plant Simulation", Springer, Berlin und Heidelberg
- Kosturiak, J. und M. Gregor (1995): Simulation von Produktionssystemen. Springer, Wien und New York.
- Law, A. M. (2015): Simulation Modeling and Analysis. 5th Edition, McGraw-Hill, New York usw.
- Liebl, F. (1995): Simulation. 2. Auflage, Oldenbourg, München.
- Noche, B. und S. Wenzel (1991): Marktspiegel Simulationstechnik. In: Produktion und Logistik. TÜV Rheinland, Köln.
- Pidd, M. (2004): Computer Simulation in Management Science. 5th Edition, Wiley, Chichester.
- Robinson S (2004) Simulation: the practice of model development and use. John Wiley & Sons, Chichester
- VDI (2014): Simulation von Logistik-, Materialfluß- und Produktionssystemen. VDI Richtlinie 3633, Blatt 1, VDI-Verlag, Düsseldorf.





T

6.108 Course: Distributed Computing [T-INFO-101298]

Responsible: Prof. Dr. Achim Streit
Organisation: KIT Department of Informatics
Part of: [M-INFO-100761 - Distributed Computing](#)

Type	Credits	Recurrence	Version
Written examination	4	Each winter term	2

Events					
WS 20/21	2400050	Distributed Computing	2 SWS	Lecture (V) / 	Streit, Krauß, Kühn
Exams					
SS 2020	7500282	Distributed Computing		Prüfung (PR)	Streit



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


T

6.109 Course: Dynamic Macroeconomics [T-WIWI-109194]

Responsible: Prof. Dr. Johannes Brumm
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101478 - Innovation and Growth](#)
[M-WIWI-101496 - Growth and Agglomeration](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2560402	Dynamic Macroeconomics	2 SWS	Lecture (V) / 	Brumm
WS 20/21	2560403	Übung zu Dynamic Macroeconomics	1 SWS	Practice (Ü) / 	Krause

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.

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

V

Dynamic Macroeconomics

2560402, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Literature

Literatur und Skripte werden in der Veranstaltung angegeben.

T

6.110 Course: Efficient Energy Systems and Electric Mobility [T-WIWI-102793]

Responsible: PD Dr. Patrick Jochem
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101452 - Energy Economics and Technology](#)

Type	Credits	Recurrence	Version
Written examination	3,5	Each summer term	1

Events					
SS 2020	2581006	Efficient Energy Systems and Electric Mobility	2 SWS	Lecture (V)	Jochem, Fichtner
Exams					
SS 2020	7981006	Efficient Energy Systems and Electric Mobility		Prüfung (PR)	Fichtner

Competence Certificate
 See German version.

Prerequisites
 None

Recommendation
 None

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

V

Efficient Energy Systems and Electric Mobility

2581006, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

This lecture series combines two of the most central topics in the field of energy economics at present, namely energy efficiency and electric mobility. The objective of the lecture is to provide an introduction and overview to these two subject areas, including theoretical as well as practical aspects, such as the technologies, political framework conditions and broader implications of these for national and international energy systems.

- Understand the concept of energy efficiency as applied to specific systems
- Obtain an overview of the current trends in energy efficiency
- Be able to determine and evaluate alternative methods of energy efficiency improvement
- Overview of technical and economical stylized facts on electric mobility
- Judging economical, ecological and social impacts through electric mobility

Literature

Wird in der Vorlesung bekanntgegeben.

T

6.111 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-101446 - Market Engineering](#)
[M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2540454	eFinance: Information Systems for Securities Trading	2 SWS	Lecture (V) /	Weinhardt, Notheisen
WS 20/21	2540455	Übungen zu eFinance: Informationssysteme für den Wertpapierhandel	1 SWS	Practice (Ü) /	Jaquart
Exams					
SS 2020	7900293	eFinance: Information Systems for Securities Trading		Prüfung (PR)	Weinhardt

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

Competence Certificate

Success is monitored by means of ongoing elaborations and presentations of tasks and an examination (60 minutes) at the end of the lecture period. The scoring scheme for the overall evaluation will be announced at the beginning of the course.

Prerequisites

see below

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 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
On-Site

Content

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.

Literature

- Maureen O'Hara: Market Microstructure Theory (1997, Blackwell Publishing)
- Larry Harris: Trading and Exchanges – Market Microstructure for Practitioners (2004, Oxford University Press)

Further Literature

- Joel Hasbrouck: Empirical Market Microstructure (2007, Oxford University Press)
- Thierry Foucault, Marco Pagano, and Ailsa Roell: Market Liquidity: Theory, Evidence, and Policy (2013, Oxford University Press)

T**6.112 Course: Embedded Systems for Multimedia and Image Processing [T-INFO-101296]****Responsible:** Prof. Dr.-Ing. Jörg Henkel**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100759 - Embedded Systems for Multimedia and Image Processing](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	1

T

6.113 Course: Emerging Trends in Digital Health [T-WIWI-110144]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104403 - Critical Digital Infrastructures](#)

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

Events					
SS 2020	2513404	Emerging Trends in Digital Health (Bachelor)	2 SWS	Seminar (S)	Lins, Sunyaev, Thiebes
SS 2020	2513405	Emerging Trends in Digital Health (Master)	2 SWS	Seminar (S)	Lins, Sunyaev, Thiebes
Exams					
SS 2020	7900146	Emerging Trends in Digital Health (Master)		Prüfung (PR)	Sunyaev

Competence Certificate

The alternative exam assessment consists of a final thesis.

Prerequisites

None.

Annotation

The course is usually held as a block course.

T

6.114 Course: Emerging Trends in Internet Technologies [T-WIWI-110143]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104403 - Critical Digital Infrastructures](#)

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

Events					
SS 2020	2513402	Emerging Trends in Internet Technologies (Bachelor)	2 SWS	Seminar (S)	Lins, Sunyaev, Thiebes
SS 2020	2513403	Emerging Trends in Internet Technologies (Master)	2 SWS	Seminar (S)	Lins, Sunyaev, Thiebes
Exams					
SS 2020	7900128	Emerging Trends in Internet Technologies (Master)		Prüfung (PR)	Sunyaev

Competence Certificate

The alternative exam assessment consists of a final thesis.

Prerequisites

None.

Annotation


The course is usually held as a block course.

T

6.115 Course: Emissions into the Environment [T-WIWI-102634]

Responsible: Ute Karl
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101412 - Industrial Production III](#)
[M-WIWI-101471 - Industrial Production II](#)

Type	Credits	Recurrence	Version
Written examination	3,5	Each winter term	1

Events					
WS 20/21	2581962	Emissions into the Environment	2 SWS	Lecture (V) / 	Karl
Exams					
SS 2020	7981962	Emissions into the Environment		Prüfung (PR)	Schultmann

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

Competence Certificate

The assessment consists of an oral (30 minutes) or a written (60 minutes) exam (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Recommendation

None

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

V

Emissions into the Environment

2581962, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

Emission sources/emission monitoring/emission reduction: The lecture gives an overview of relevant emissions of air pollutants and greenhouse gases, emission monitoring and pollutant abatement options together with relevant legal regulations at national and international level. In addition, the fundamentals of circular economy, waste management and recycling are explained.

Structure:**Air pollution control**

- Introduction, terms and definitions
- Sources of air pollutants
- Legal framework of air quality control
- Technical measures to reduce air pollutant emissions

Circular economy, recycling and waste management

- Waste collection and logistics
- Dual systems for packaging waste
- Recycling
- Thermal and biological waste treatment
- Final waste disposal

Literature

Wird in der Veranstaltung bekannt gegeben.

T**6.116 Course: Empirical Software Engineering [T-INFO-101335]**

Responsible: Prof. Dr. Walter Tichy
Organisation: KIT Department of Informatics
Part of: [M-INFO-100798 - Empirical Software Engineering](#)

Type
 Oral examination

Credits
 4

Recurrence
 Each winter term


Version
 1





Exams				
SS 2020	7500168	Empirical Software Engineering	Prüfung (PR)	Tichy

T**6.117 Course: Employment Law I [T-INFO-101329]**

Responsible: Dr. Alexander Hoff
Organisation: KIT Department of Informatics
Part of: [M-INFO-101216 - Private Business Law](#)

Type	Credits	Recurrence	Version
Written examination	3	Each term	1

Events					
WS 20/21	24167	Employment Law I	2 SWS	Lecture (V) / 	Hoff
Exams					
SS 2020	7500097	Employment Law I		Prüfung (PR)	Dreier, Matz

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

T

6.118 Course: Employment Law II [T-INFO-101330]

Responsible: Dr. Alexander Hoff
Organisation: KIT Department of Informatics
Part of: [M-INFO-101216 - Private Business Law](#)

Type
Written examination

Credits
3

Recurrence
Each term

Version
1

Events					
SS 2020	24668	Employment Law II	2 SWS	Lecture (V)	Hoff
Exams					
SS 2020	7500098	Employment Law II		Prüfung (PR)	Dreier, Matz

T

6.119 Course: Energy and Environment [T-WIWI-102650]

Responsible: Ute Karl
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101452 - Energy Economics and Technology](#)
[M-WIWI-101468 - Environmental Economics](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2581003	Energy and Environment	2 SWS	Lecture (V)	Karl
SS 2020	2581004	Übungen zu Energie und Umwelt	1 SWS	Practice (Ü)	Keles, Weinand
Exams					
SS 2020	7981003	Energy and Environment		Prüfung (PR)	Fichtner

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

Energy and Environment

2581003, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The lecture focuses on the environmental impacts arising from fossil fuels use and on the methods for the evaluation of such impacts. The first part of the lecture describes the environmental impacts of air pollutants and greenhouse gases as well as technical measures for emission control. The second part covers methods of impact assessment and their use in environmental communication as well as methods for the scientific support of emission control strategies.

The topics include:

- Fundamentals of energy conversion
- Formation of air pollutants during combustion
- Technical measures to control emissions from fossil-fuel combustion processes
- External effects of energy supply (life cycle analyses of selected energy systems)
- Environmental communication on energy services (e.g. electricity labelling, carbon footprint)
- Integrated Assessment Modelling to support the European Clean Air Strategy
- Cost-effectiveness analyses and cost-benefit analyses for emission control strategies
- Monetary valuation of external effects (external costs)

Literature


Die Literaturhinweise sind in den Vorlesungsunterlagen enthalten (vgl. ILIAS)





T

6.120 Course: Energy Informatics 1 [T-INFO-103582]

Responsible: Prof. Dr. Veit Hagenmeyer
Organisation: KIT Department of Informatics
Part of: [M-INFO-101885 - Energy Informatics 1](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each winter term	2

Events					
WS 20/21	2400058	Energy Informatics 1	4 SWS	Lecture / Practice (VÜ) / 	Hagenmeyer, Heidrich, Meisenbacher, Phipps, Turowski
Exams					
SS 2020	7500079	Energy informatics 1		Prüfung (PR)	Hagenmeyer

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

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

V

Energy Informatics 1

2400058, WS 20/21, 4 SWS, Language: German/English, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

Content

This module provides an overview of the physical and technical principles of different forms of energy, their storage, their transmission and the corresponding energy conversion processes. Furthermore, this module covers the system-technical combination of different local energy systems to form an overall energy system and provides an outlook on typical information technology applications in the energy sector.

In detail, the following topics are discussed with examples:

- Energy forms, systems and storage
- Energy conversion processes in power plants
- Renewable resources
- Energy transmission (electricity/gas/heat networks)
- Electrical networks of the future, load management
- Use of information and communication technology (ICT)
- Energy Economics

Literature

Diese werden in der Vorlesung gegeben.

T**6.121 Course: Energy Informatics 1 - preliminary work [T-INFO-110356]**

Responsible: Prof. Dr. Veit Hagenmeyer
Organisation: KIT Department of Informatics
Part of: [M-INFO-101885 - Energy Informatics 1](#)

Type	Credits	Recurrence	Version
Completed coursework	0	Each term	1

Exams				
SS 2020	7500065	Energy Informatics 1 - preliminary work	Prüfung (PR)	Hagenmeyer

T

6.122 Course: Energy Informatics 2 [T-INFO-106059]

Responsible: Prof. Dr. Veit Hagenmeyer
Organisation: KIT Department of Informatics
Part of: [M-INFO-103044 - Energy Informatics 2](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each summer term	2

Events					
SS 2020	2400017	Energy Informatics 2	4 SWS	Lecture / Practice (VÜ)	Hagenmeyer, Turowski, Brown, Duepmeier, Stucky, Keller, Mikut, Ludwig, Kühnapfel, Cakmak, Wegner, Wagner, Zündorf
Exams					
SS 2020	7500156	Energy Informatics 2		Prüfung (PR)	Hagenmeyer

T

6.123 Course: Energy Market Engineering [T-WIWI-107501]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101446 - Market Engineering](#)
[M-WIWI-101451 - Energy Economics and Energy Markets](#)
[M-WIWI-103720 - eEnergy: Markets, Services and Systems](#)
[M-WIWI-104813 - Information Systems: Internet-based Markets and Services](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2540464	Energy Market Engineering	2 SWS	Lecture (V)	Staudt, vom Scheidt
SS 2020	2540465	Übung zu Energy Market Engineering	1 SWS	Practice (Ü)	Staudt, Richter
Exams					
SS 2020	79852	Energy Market Engineering		Prüfung (PR)	Weinhardt

Competence Certificate

The assessment consists of a written exam (60 min) (according to §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

None

Recommendation

None

Annotation

Former course title until summer term 2017: T-WIWI-102794 "eEnergy: Markets, Services, Systems".

The lecture has also been added in the IIP Module *Basics of Liberalised Energy Markets*.

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

V

Energy Market Engineering

2540464, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature



- Erdmann G, Zweifel P. *Energieökonomik, Theorie und Anwendungen*. Berlin Heidelberg: Springer; 2007.
- Grimm V, Ockenfels A, Zoettl G. Strommarktdesign: Zur Ausgestaltung der Auktionsregeln an der EEX *. *Zeitschrift für Energiewirtschaft*. 2008:147-161.
- Stoft S. *Power System Economics: Designing Markets for Electricity*. IEEE; 2002.,
- Ströbele W, Pfaffenberger W, Heuterkes M. *Energiewirtschaft: Einführung in Theorie und Politik*. 2nd ed. München: Oldenbourg Verlag; 2010:349.





T

6.124 Course: Energy Networks and Regulation [T-WIWI-107503]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101446 - Market Engineering](#)
[M-WIWI-103720 - eEnergy: Markets, Services and Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2540494	Energy Networks and Regulation	2 SWS	Lecture (V) / 	Rogat, Huber
WS 20/21	2540495	Übung zu Energy Networks and Regulation	1 SWS	Practice (Ü) / 	Rogat
Exams					
SS 2020	7900294	Energy Networks and Regulation		Prüfung (PR)	Weinhardt

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 is offered every semester. Re-examinations are offered on every ordinary examination date.

Prerequisites

None

Recommendation

None

Annotation

Former course title until summer term 2017: T-WIWI-103131 "Regulatory Management and Grid Management - Economic Efficiency of Network Operation"

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

V

Energy Networks and Regulation

2540494, WS 20/21, 2 SWS, [Open in study portal](#)

Lecture (V)
Online

Content**Learning Goals**

The student,

- understands the business model of a network operator and knows its central tasks in the energy supply system,
- has a holistic overview of the interrelationships in the network economy,
- understands the regulatory and business interactions,
- is in particular familiar with the current model of incentive regulation with its essential components and understands its implications for the decisions of a network operator
- is able to analyse and assess controversial issues from the perspective of different stakeholders.

Content of teaching

The lecture “Energy Networks and Regulation” provides insights into the regulatory framework of electricity and gas. It touches upon the way the grids are operated and how regulation affects almost all grid activities. The lecture also addresses approaches of grid companies to cope with regulation on a managerial level. We analyze how the system influences managerial decisions and strategies such as investment or maintenance. Furthermore, we discuss how the system affects the operator’s abilities to deal with the massive challenges lying ahead (“Energiewende”, redispatch, European grid integration, electric vehicles etc.). Finally, we look at current developments and major upcoming challenges, e.g., the smart meter rollout. Covered topics include:

- Grid operation as a heterogeneous landscape: big vs. small, urban vs. rural, TSO vs. DSO
- Objectives of regulation: Fair price calculation and high standard access conditions
- The functioning of incentive regulation
- First major amendment to the incentive regulation: its merits, its flaws
- The revenue cap and how it is adjusted according to certain exogenous factors
- Grid tariffs: How are they calculated, what is the underlying rationale, do we need a reform (and which)?
- Exogenous costs shifted (arbitrarily?) into the grid, e.g. feed-in tariffs for renewable energy or decentralized supply.

Literature

Averch, H.; Johnson, L.L (1962). Behavior of the firm under regulatory constraint, in: American Economic Review, 52 (5), S. 1052 – 1069.

Bundesnetzagentur (2006): Bericht der Bundesnetzagentur nach § 112a EnWG zur Einführung der Anreizregulierung nach § 21a EnWG, http://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Energie/Unternehmen_Institutionen/Netzentgelte/Anreizregulierung/BerichtEinfuehrgAnreizregulierung.pdf?__blob=publicationFile&v=3.

Bundesnetzagentur (2015): Evaluierungsbericht nach § 33 Anreizregulierungsverordnung, https://www.bmwi.de/Redaktion/DE/Downloads/A/anreizregulierungsverordnung-evaluierungsbericht.pdf?__blob=publicationFile&v=1.

Filippini, M.; Wild, J.; Luchsinger, C. (2001): Regulierung der Verteilnetzpreise zu Beginn der Marktöffnung. Erfahrungen in Norwegen und Schweden, Bundesamt für Energie, Bern, http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/34/066/34066585.pdf.

Gómez, T. (2013): Monopoly Regulation, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 151 – 198, Springer-Verlag, London.

Gómez, T. (2013): Electricity Distribution, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 199 – 250, Springer-Verlag, London.

Pérez-Arriaga, I.J. (2013): Challenges in Power Sector Regulation, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 647 – 678, Springer-Verlag, London.

Rivier, M.; Pérez-Arriaga, I.J.; Olmos, L. (2013): Electricity Transmission, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 251 – 340, Springer-Verlag, London.

T

6.125 Course: Energy System Modelling [T-INFO-108532]

Responsible: Dr. Thomas William Brown
Organisation: KIT Department of Informatics
Part of: [M-INFO-104117 - Energy System Modelling](#)

Type	Credits	Recurrence	Version
Oral examination	4	Each summer term	1

Events					
SS 2020	2400230	Energy System Modelling	2 SWS		Brown
Exams					
SS 2020	7500093	Energy System Modelling		Prüfung (PR)	Brown

Recommendation

Basic knowledge of mathematics, linear algebra, differential equations, statistics and programming is assumed.

If you are not familiar with Python, it is recommended to take an online tutorial in Python before the course starts, since the exercise classes involve Python programming.

Basic knowledge of network theory and optimisation theory are helpful, but not required.

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

V

Energy System Modelling

2400230, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Content

This module will cover the modelling and analysis of future energy systems, with a focus on renewable energies and their interactions with energy networks.

Topics include:

- Time series analysis of wind, solar and energy demand in Europe.
- Complex network theory.
- Analysis of power flow in electrical networks.
- Modelling storage, the role of storage versus networks.
- Basics of optimisation, Karush-Kuhn-Tucker conditions.
- Basics of microeconomics.
- Economics of electricity markets.
- Short-run versus long-run efficiency.
- Network optimisation, storage optimisation.
- Programming energy system models.
- Model reduction techniques.
- Coupling electricity to other energy sectors.
- Role of renewables in electricity markets.

Additional topics may also include:

- Dynamics in power networks.
- Contingency analysis.
- Effects of climate change on energy systems.



6.126 Course: Energy Systems Analysis [T-WIWI-102830]

Responsible: Dr. Armin Ardone
Prof. Dr. Wolf Fichtner

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101452 - Energy Economics and Technology](#)

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	1

Events					
WS 20/21	2581002	Energy Systems Analysis	2 SWS	Lecture (V) /	Ardone, Fichtner
Exams					
SS 2020	7981002	Energy Systems Analysis		Prüfung (PR)	Fichtner

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.

Prerequisites

None

Recommendation

None

Annotation

Since 2011 the lecture is offered in winter term. Exams can still be taken in summer term.

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



Energy Systems Analysis

2581002, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

1. Overview and classification of energy systems modelling approaches
2. Usage of scenario techniques for energy systems analysis
3. Unit commitment of power plants
4. Interdependencies in energy economics
5. Scenario-based decision making in the energy sector
6. Visualisation and GIS techniques for decision support in the energy sector

Learning goals:

The student

- has the ability to understand and critically reflect the methods of energy system analysis, the possibilities of its application in the energy industry and the limits and weaknesses of this approach
- can use select methods of the energy system analysis by her-/himself

Literature

Weiterführende Literatur:

- Möst, D. und Fichtner, W.: **Einführung zur Energiesystemanalyse**, in: Möst, D., Fichtner, W. und Grunwald, A. (Hrsg.): Energiesystemanalyse, Universitätsverlag Karlsruhe, 2009
- Möst, D.; Fichtner, W.; Grunwald, A. (Hrsg.): **Energiesystemanalyse** - Tagungsband des Workshops "Energiesystemanalyse" vom 27. November 2008 am KIT Zentrum Energie, Karlsruhe, Universitätsverlag Karlsruhe, 2009 [PDF: <http://digbib.ubka.uni-karlsruhe.de/volltexte/documents/928852>]



6.127 Course: Energy Trade and Risk Management [T-WIWI-102691]

Responsible: N.N.
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101451 - Energy Economics and Energy Markets](#)

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	2

Events					
SS 2020	2581020	Energy Trade and Risk Management	2 SWS	Lecture (V)	Keles, Kraft
Exams					
SS 2020	7981020	Energy Trade and Risk Management		Prüfung (PR)	Fichtner

Competence Certificate

The assessment consists of a written exam (60 minutes).

Prerequisites

None

Recommendation

None

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



Energy Trade and Risk Management

2581020, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

1. Introduction to Markets, Mechanisms and Interaction
2. Electricity Trading (platforms, products, mechanisms)
3. Balancing Energy Markets and Congestion Management
4. Coal Markets (reserves, supply, demand, and transport)
5. Investments and Capacity Markets
6. Oil and Gas Markets (supply, demand, trade, and players)
7. Trading Game
8. Risk Management in Energy Trading

Organizational issues

Termine siehe Institutsaushang

Literature

Weiterführende Literatur:

Burger, M., Graeber, B., Schindlmayr, G. (2007): *Managing energy risk: An integrated view on power and other energy markets*, Wiley&Sons, Chichester, England

EEX (2010): *Einführung in den Börsenhandel an der EEX auf Xetra und Eurex*, www.eex.de

Erdmann, G., Zweifel, P. (2008), *Energieökonomik, Theorie und Anwendungen*, Springer, ISBN: 978-3-540-71698-3

Hull, J.C. (2006): *Options, Futures and other Derivatives*, 6. Edition, Pearson Prentice Hall, New Jersey, USA

Borchert, J., Schlemm, R., Korth, S. (2006): *Stromhandel: Institutionen, Marktmodelle, Pricing und Risikomanagement (Gebundene Ausgabe)*, Schäffer-Poeschel Verlag


www.riskglossary.com





T

6.128 Course: Engineering FinTech Solutions [T-WIWI-106193]

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-105036 - FinTech Innovations](#)

Type	Credits	Recurrence	Version
Examination of another type	9	Each term	5

Events					
SS 2020	2530357	Engineering FinTech Solutions	6 SWS	Practical course (P)	Ulrich
WS 20/21	2500020	Engineering FinTech Solutions	6 SWS	Practical course (P) / 	Ulrich
Exams					
SS 2020	7900287	Engineering FinTech Solutions		Prüfung (PR)	Ulrich

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

Competence Certificate

The assessment is carried out in form of a written thesis based on the course "Engineering FinTech Solutions".

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

V

Engineering FinTech Solutions

2530357, SS 2020, 6 SWS, Language: English, [Open in study portal](#)

Practical course (P)**Content**

The assessment is carried out in form of a written thesis based on the course "Engineering FinTech Solutions".

This project invites students to either pursue their own FinTech innovation project or to contribute to the Chair's ongoing innovation projects.

The course is targeted to students with strong knowledge in the field of computational risk and asset management and strong programming skills. It offers students the opportunity to develop an algorithmic solution and hence ample their programming experience and their understanding of financial economics or asset and risk management.

In order to take the course "Engineering FinTech Solutions", students must have completed the module "Data Science for Finance" with a grade of 1.3 or better.

The total workload for this course is approximately 270 hours. This consists of regular meetings with members of the research group and time for independent work on the software project.

Students will learn to connect innovative financial research with modern information technology to build a prototype that solves some daunting tasks for professional end-users in the field of modern asset and risk management.

Organizational issues

Blücherstr. 17, E009; 14-tägig, tba

Literature

Literatur wird in der ersten Vorlesung bekannt gegeben.

V

Engineering FinTech Solutions

2500020, WS 20/21, 6 SWS, Language: English, [Open in study portal](#)

**Practical course (P)
Online****Content**

This project invites students to either pursue their own FinTech innovation project or to contribute to the Chair's ongoing innovation projects. Students will learn to connect innovative financial research with modern information technology to build a prototype that solves some daunting tasks for professional end-users in the field of modern asset and risk management. The course is targeted to students with strong knowledge in the field of computational risk and asset management and strong programming skills. It offers students the opportunity to develop an algorithmic solution and hence ample their programming experience and their understanding of financial economics or asset and risk management.

Organizational issues

Termine werden bekannt gegeben

T

6.129 Course: Engineering Interactive Systems [T-WIWI-110877]

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-102806 - Service Innovation, Design & Engineering
 M-WIWI-104080 - Designing Interactive Information Systems
 M-WIWI-104812 - Information Systems: Engineering and Transformation
 M-WIWI-104813 - Information Systems: Internet-based Markets and Services

Type
Examination of another type

Credits
4,5

Recurrence
Each winter term

Version
1

Events					
WS 20/21	2540420	Engineering Interactive Systems	3 SWS	Lecture (V) /	Mädche
Exams					
WS 20/21	7900210	Engineering Interactive Systems		Prüfung (PR)	Mädche

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

Competence Certificate

Alternative exam assessment. The assessment consists of a one-hour exam and the implementation of a Capstone project. Details will be announced at the beginning of the course.

Prerequisites

None

Recommendation

None

Annotation

The course is held in English.

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

V

Engineering Interactive Systems

2540420, WS 20/21, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)
On-Site

Literature

Siehe Englische Literatur

T**6.130 Course: Entrepreneurial Leadership & Innovation Management [T-WIWI-102833]**

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Irregular	3

Competence Certificate

Please note: The seminar cannot be offered in the winter semester 2019/2020 due to organizational reasons.
 Alternative exam assessment.

Prerequisites

None

Recommendation

None

T

6.131 Course: Entrepreneurship [T-WIWI-102864]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Written examination	3	Each term	1

Events					
SS 2020	2545001	Entrepreneurship	2 SWS	Lecture (V)	Terzidis
Exams					
SS 2020	7900002	Entrepreneurship		Prüfung (PR)	Terzidis
SS 2020	7900192	Entrepreneurship		Prüfung (PR)	Terzidis

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Recommendation

None

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

V

Entrepreneurship

2545001, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Literature

Füglister, Urs, Müller, Christoph und Volery, Thierry (2008): Entrepreneurship

Ries, Eric (2011): The Lean Startup

Osterwalder, Alexander (2010): Business Model Generation

T**6.132 Course: Entrepreneurship Research [T-WIWI-102894]**

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each summer term	1

Events					
SS 2020	2545002	Entrepreneurship Research	2 SWS	Seminar (S)	Terzidis, Henn
Exams					
SS 2020	7900052	Entrepreneurship Research		Prüfung (PR)	Terzidis

Competence Certificate

The performance review is done via a so called other methods of performance review (term paper) (alternative exam assessment). The final grade is a result from both, the grade of the term paper and its presentation, as well as active participation during the seminar.

Prerequisites

None

Recommendation

None

Annotation

The topics will be prepared in groups. The presentation of the results is done during a a block period seminar at the end of the semester. Students have to be present all day long during the seminar.

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

V**Entrepreneurship Research**

2545002, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)**Organizational issues**

1. Termin: Do, 23.04.2020, 09:00 - 13:00 Uhr

2. Termin: Mi, 15.07.2020, 09:00 - 16:00 Uhr

Beide Termine finden in Geb. 01.85, Raum 511 statt

Literature

Wird im Seminar bekannt gegeben.

T

6.133 Course: Environmental and Resource Policy [T-WIWI-102616]

Responsible: Rainer Walz
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101468 - Environmental Economics](#)

Type	Credits	Recurrence	Version
Written examination	4	Each summer term	1

Events					
SS 2020	2560548	Environmental and Ressource Policy	2 SWS	Lecture / Practice (VÜ)	Walz
Exams					
SS 2020	7900330	Environmental and Resource Policy		Prüfung (PR)	Walz

Competence Certificate
 See German version

Recommendation

It is recommended to already have knowledge in the area of industrial organization and economic policy. This knowledge may be acquired in the courses *Introduction to Industrial Organization* [2520371] and *Economic Policy* [2560280].

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

V

Environmental and Ressource Policy

2560548, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture / Practice (VÜ)

Organizational issues

Die Vorlesung wird im Sommersemester als online-Lehrveranstaltung mit Hilfe von GoToMeeting durchgeführt. Interessierte Studierende melden sich bitte vorab mit einer Mail an Rainer.Walz@isi.fraunhofer.de und unter dem Betreff "Vorlesung Sommersemester" an. Sie erhalten dann einen link zugeschickt, unter dem sie sich zum Zeitpunkt der Vorlesung in die Videokonferenz einschalten können. Weitere Informationen erfolgen dann in der ersten Vorlesungsstunde am 20.4.2020.

Literature**Weiterführende Literatur:**

Michaelis, P.: Ökonomische Instrumente in der Umweltpolitik. Eine anwendungsorientierte Einführung, Heidelberg
 OECD: Environmental Performance Review Germany, Paris

T

6.134 Course: Environmental Economics and Sustainability [T-WIWI-102615]

Responsible: Prof. Dr. Rainer Walz
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101468 - Environmental Economics](#)

Type	Credits	Recurrence	Version
Written examination	5	Each winter term	1

Exams				
SS 2020	7900273	Environmental Economics and Sustainability	Prüfung (PR)	Mitusch
SS 2020	7900331	Environmental Economics and Sustainability	Prüfung (PR)	Walz

Competence Certificate
 See German version

Prerequisites
 None

Recommendation
 It is recommended to already have knowledge in the area of macro- and microeconomics. This knowledge may be acquired in the courses *Economics I: Microeconomics* [2600012] and *Economics II: Macroeconomics* [2600014].

T**6.135 Course: Environmental Law [T-INFO-101348]**

Responsible: Dr. Johannes Eichenhofer
Organisation: KIT Department of Informatics
Part of: [M-INFO-101217 - Public Business Law](#)
[M-WIWI-101468 - Environmental Economics](#)

Type	Credits	Recurrence	Version
Written examination	3	Each term	1

Exams				
SS 2020	7500082	Environmental Law	Prüfung (PR)	Eichenhofer



6.136 Course: European and International Law [T-INFO-101312]

Responsible: Ulf Brühann
Organisation: KIT Department of Informatics
Part of: [M-INFO-101217 - Public Business Law](#)

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	1

Events					
SS 2020	24666	Europäisches und Internationales Recht	2 SWS	Lecture (V)	Brühann
Exams					
SS 2020	7500084	European and International Law		Prüfung (PR)	Eichenhofer
SS 2020	7500293	European and International Law		Prüfung (PR)	Eichenhofer

T**6.137 Course: European and National Technology Law [T-INFO-109824]**

Responsible: Dr. Yvonne Matz
Organisation: KIT Department of Informatics
Part of: [M-INFO-104810 - European and National Technology Law](#)

Type	Credits	Recurrence	Version
Written examination	9	Each term	1



Exams				
SS 2020	7500320	European and National Technology Law	Prüfung (PR)	Eichenhofer





T

6.138 Course: Experimental Economics [T-WIWI-102614]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101446 - Market Engineering](#)
[M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-101505 - Experimental Economics](#)
[M-WIWI-103118 - Data Science: Data-Driven User Modeling](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2540489	Experimental Economics	2 SWS	Lecture (V) / 	Peukert, Knierim
WS 20/21	2540493	Übung zu Experimentelle Wirtschaftsforschung	1 SWS	Practice (Ü) / 	Greif-Winzrieth, Knierim, Peukert

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

Competence Certificate

The assessment consists of a written exam (60 min) (according to §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

None

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

V

Experimental Economics

2540489, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

Experiments have become a valuable tool in Economics and Information Systems research. Nearly all fields of the economic discipline use experiments to verify theoretical predictions and to identify cause-effect relationships. Besides being used for empirical validation, this method is applied in political and strategic consulting. The lecture gives an introduction to experimental methods in Economics and in the Information Systems research domain, and shows differences to experiments in natural sciences. Scientific studies are used to show exemplary applications.

Literature

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

T

6.139 Course: Extraordinary additional course in the module Cross-Functional Management Accounting [T-WIWI-108651]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101510 - Cross-Functional Management Accounting](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each term	1

Competence Certificate

The assessment depends on which extraordinary course becomes part of the module "Cross-Functional Management Accounting".

.

Prerequisites

None

Annotation

The pupose of this placeholder is to make it possible zu include an extraordinary course in the module "Cross-Functional Management Accounting". Proposals for specific courses have to be approved in advance by the module coordinator.

T

6.140 Course: Financial Analysis [T-WIWI-102900]

Responsible: Dr. Torsten Luedecke
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2530205	Financial Analysis	2 SWS	Lecture (V)	Luedecke
SS 2020	2530206	Übungen zu Financial Analysis	2 SWS	Practice (Ü)	Luedecke
Exams					
SS 2020	7900075	Financial Analysis		Prüfung (PR)	Luedecke
WS 20/21	7900059	Financial Analysis		Prüfung (PR)	Luedecke, Ruckes

Competence Certificate

See German version.

Prerequisites

None

Recommendation

Basic knowledge in corporate finance, accounting, and valuation is required.

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

V

Financial Analysis

2530205, SS 2020, 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.
- Penman, S.H. (2013): Financial Statement Analysis and Security Valuation, 5th ed., McGraw Hill.

T

6.141 Course: Financial Econometrics [T-WIWI-103064]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101638 - Econometrics and Statistics I](#)
[M-WIWI-101639 - Econometrics and Statistics II](#)
[M-WIWI-105414 - Statistics and Econometrics II](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	2

Events					
SS 2020	2520022	Financial Econometrics	2 SWS	Lecture (V)	Schienle
SS 2020	2520023	Übungen zu Financial Econometrics I	2 SWS	Practice (Ü)	Schienle, Görgen
Exams					
SS 2020	7900117	Financial Econometrics		Prüfung (PR)	Schienle
SS 2020	7900223	Financial Econometrics		Prüfung (PR)	Schienle

Competence Certificate

The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Recommendation

Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics"[2520016]

Annotation

The course takes place each second summer term: 2018/2020....

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

V

Financial Econometrics

2520022, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content**Learning objectives:**

The student

- shows a broad knowledge of financial econometric estimation and testing techniques
- is able to apply his/her technical knowledge using software in order to critically assess empirical problems

Content:

ARMA, ARIMA, ARFIMA, (non)stationarity, causality, cointegration, ARCH/GARCH, stochastic volatility models, computer based exercises

Requirements:

It is recommended to attend the course *Economics III: Introduction to Econometrics* [2520016] prior to this course.

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Literature

Taylor, S. J. (2005): "Asset Price Dynamics, Volatility, and Prediction", Princeton University Press.

Tsay, R. S. (2005): "Analysis of Financial Time Series: Financial Econometrics", Wiley, 2nd edition.

Cochrane, J. H. (2005): "Asset Pricing", revised edition, Princeton University Press.

Campbell, J. Y., A. W. Lo, and A. C. MacKinlay (1997): "The Econometrics of Financial Markets", Princeton University Press.

Hamilton, J. D. (1994): "Time Series Analysis", Princeton University Press.



Additional literature will be discussed in the lecture.

T

6.142 Course: Financial Econometrics II [T-WIWI-110939]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101638 - Econometrics and Statistics I](#)
[M-WIWI-101639 - Econometrics and Statistics II](#)
[M-WIWI-105414 - Statistics and Econometrics II](#)

Type	Credits	Recurrence	Version
Written examination	4,5	see Annotations	1

Events					
WS 20/21	2521302	Financial Econometrics II	2 SWS	Lecture (V) / 	Schienle, Buse
WS 20/21	2521303	Übung zu Financial Econometrics II	1 SWS	Practice (Ü) / 	Görgen, Buse, Schienle

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

Competence Certificate

The assessment consists of a written exam (90 minutes).

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

6.143 Course: Financial Intermediation [T-WIWI-102623]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)
[M-WIWI-101502 - Economic Theory and its Application in Finance](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2530232	Financial Intermediation	2 SWS	Lecture (V) / 	Ruckes
WS 20/21	2530233	Übung zu Finanzintermediation	1 SWS	Practice (Ü) / 	Ruckes, Hoang, Benz
Exams					
SS 2020	7900078	Financial Intermediation		Prüfung (PR)	Ruckes
WS 20/21	7900063	Financial Intermediation		Prüfung (PR)	Ruckes

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

None

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

V

Financial Intermediation

2530232, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

The lecture covers the following topics:

- Arguments for the existence of financial intermediaries
- Bank loan analysis, relationship lending
- Stability of the financial system
- The macroeconomic role of financial intermediation
- Principles of the prudential regulation of banks

Learning outcomes: Students

- are in a position to describe the arguments for the existence of financial intermediaries,
- are able to discuss and analyze both static and dynamic aspects of contractual relationships between banks and borrowers,
- are able to discuss the macroeconomic role of the banking system,
- are in a position to explain the fundamental principles of the prudential regulation of banks and are able to recognize and evaluate the implications of specific regulations.

Workload:

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

Literature

Weiterführende Literatur:


- Hartmann-Wendels/Pfingsten/Weber (2014): Bankbetriebslehre, 6. Auflage, Springer Verlag.
- Freixas/Rochet (2008): Microeconomics of Banking, 2. Auflage, MIT Press.





T

6.144 Course: Firm creation in IT security [T-WIWI-110374]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Irregular	1

Events					
SS 2020	2545109	Basic concepts of Entrepreneurship in the area of IT security	2 SWS	Seminar (S)	Ntagiakou, Kienzle, Terzidis
WS 20/21	2545109	Business Planning for Founders in the field of IT-Security	2 SWS	Seminar (S) / 	Ntagiakou, Kienzle, Terzidis
Exams					
SS 2020	7900065	Firm creation in IT security		Prüfung (PR)	Terzidis

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

Competence Certificate

Alternative exam assessment. The grade consists of the presentation and the written elaboration.

Prerequisites

None

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

V

Basic concepts of Entrepreneurship in the area of IT security

2545109, SS 2020, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)

Content

In order to identify opportunities, the participants should identify fields for entrepreneurial opportunities in a systematic web research. For this purpose, Systematic Mapping procedures will be adapted to the research of general web sources and applied to the research of interesting fields in the area of cyber security.

Information about the seminar:

In the seminar you will work in groups of max. 4 persons. Group applications are welcome but not a prerequisite for participation.

Some of the seminars will be held in English.

The focus of the seminar is Opportunity Recognition in the field of IT-Security, followed by ideation sessions with the aim to find possible applications for technologies that are developed at the KIT. Prototyping and also Pitching are part of the seminar.

Target group:

Master Students

Information on the allocation of seminar places:

The registration for the seminar is possible in the Wiwi portal in the period from 11.09.2019 to 05.10.2019 at 23:55 clock. To apply for the seminar, please send us a letter of motivation (max. 5 sentences).

Seminar contents:

- To identify opportunities, the participants should identify fields for entrepreneurial opportunities in a systematic web research. For this purpose, Systematic Mapping procedures will be adapted to the research of general web sources and applied to the research of interesting fields in the area of cyber security.
- All information will be discussed with experts on the second seminar day. The aim of the first two sessions is to develop a systematic segmentation of market needs.
- After the teams have been formed, the workshop "Technology Application Selection (TAS)" follows. This is a framework developed by EnTechnon that will help the teams to develop concrete business ideas based on given technologies. The three steps of the TAS will be the content of the third and fourth seminar days. Participants will generate ideas and then - based on specific criteria that we will provide - choose an idea on which they will build their value proposition.
- The final session before the final day will deal with prototyping and validation. This will use rapid prototyping and validation methods from the design thinking environment.
- On the last day - before their final presentations - the participants learn how to present the idea in a short presentation (pitch) to an interested audience.

Organizational issues

Blockveranstaltung im Rahmen des KASTEL Projekts

**Business Planning for Founders in the field of IT-Security**

2545109, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Content**Information about the seminar:**

The seminar will be conducted in Zoom. More information about the process will be available in ILIAS.

In the seminar you will work in groups of max. 4 persons. Group applications are welcome but not a prerequisite for participation.

Most of the seminars will be held in English.

The focus of the seminar is Opportunity Recognition in the field of IT-Security, followed by ideation sessions with the aim to find possible applications for Cyber Security technologies that are developed at the KIT. Prototyping and also Pitching are part of the seminar.

Target group:

Master Students

Information on the allocation of seminar places:

The registration for the seminar is possible in the Wiwi portal in the period from 09.08.2020 to 23.10.2020 at 23:59 o'clock. To apply for the seminar, please send us a letter of motivation (max. 5 sentences).

Important Dates:

18.11.2020, 09:00-15:00

02.12.2020, 09:00-15:00

16.12.2020, 09:00-15:00

Deliverables:

Homework completed in the meantime among seminar days

Final presentation on **16.12.2020**

Business Plan (7000 Words)

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.
- Develop a sound **value proposition** for a target customer
- Recognize Business Opportunities **in the field of IT-Security** applying the **TAS Approach**
- Learn the processes of **Design Thinking**
- Build a **Prototype**
- Create **Business Ideas**
- **Pitch their Business Ideas** to potential investors

Organizational issues


Blockveranstaltung im Rahmen des KASTEL Projekts





T

6.145 Course: Fixed Income Securities [T-WIWI-102644]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

Type	Credits	Recurrence	Version
Written examination	4,5	see Annotations	1

Events					
WS 20/21	2530560	Bond Markets	3 SWS	Lecture / Practice (VÜ) / 	Cölsch, Uhrig-Homburg
Exams					
SS 2020	7900112	Fixed Income Securities		Prüfung (PR)	Uhrig-Homburg

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

Competence Certificate

The examination is offered for first-time writers for the last time in the winter semester 2020/21 and (only) for repeaters in the summer semester 2021.

The assessment takes place in the form of a written examination (75 minutes) according to §4(2), 1 SPO. The examination takes place during the semester break. The examination is offered every semester and can be repeated at any regular examination date. A bonus can be acquired through successful participation in the exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites

None

Recommendation

Knowledge from the course "Derivatives" is very helpful.

Annotation

The course will no longer be offered from winter semester 2020/21.

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

V

Bond Markets

2530560, WS 20/21, 3 SWS, Language: English, [Open in study portal](#)

**Lecture / Practice (VÜ)
Online**

Content

The lecture "Bond Markets" deals with the national and international bond markets, which are an important source of financing for companies, as well as for the public sector. After an overview of the most important bond markets, different yield definitions are discussed. Based on this, the concept of the yield curve is presented. In addition, the theoretical and empirical relationships between ratings, default probabilities and spreads are analyzed. The focus will then be on questions regarding the valuation, measurement, management and control of credit risks.

The total workload for this course is approximately 135 hours (4.5 credits).

The assessment consists of a written exam (75min.) (according to §4(2), 1 SPO). A bonus can be earned through successful participation in the tutorial sessions. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one level (0.3 or 0.4). The examination is offered in each semester and can be repeated at any regular examination date.

Students deepen their knowledge of national and international bond markets. They gain knowledge of the traded instruments and their key figures for describing default risk such as ratings, default probabilities or credit spreads.

Organizational issues

Blockveranstaltung: Do 14:00-19:00 Uhr, Fr 9:45-17:15 Uhr


05./06.11., 19./20.11., 03./04.12.20





T

6.146 Course: Formal Systems [T-INFO-101336]

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

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 20/21	24086	Formale Systeme	4 SWS	Lecture / Practice (VÜ) / 	Beckert, Ulbrich
Exams					
SS 2020	7500009	Formal Systems		Prüfung (PR)	Beckert
WS 20/21	7500036	Formal Systems		Prüfung (PR)	Beckert

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

T**6.147 Course: Formal Systems II: Application [T-INFO-101281]**

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: [M-INFO-100744 - Formal Systems II: Application](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each summer term	1

T

6.148 Course: Formal Systems II: Theory [T-INFO-101378]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: [M-INFO-100841 - Formal Systems II: Theory](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each summer term	1

Events					
SS 2020	24608	Formale Systeme II - Theorie	3 SWS	Lecture (V)	Beckert, Ulbrich
Exams					
SS 2020	7500129	Formal Systems II: Theory		Prüfung (PR)	Beckert

T

6.149 Course: Fuzzy Sets [T-INFO-101376]

Responsible: Prof. Dr.-Ing. Uwe Hanebeck
Organisation: KIT Department of Informatics
Part of: [M-INFO-100839 - Fuzzy Sets](#)

Type	Credits	Recurrence	Version
Oral examination	6	Each summer term	1

Events					
SS 2020	24611	Fuzzy Sets	3 SWS	Lecture (V)	Pfaff
Exams					
SS 2020	7500001	Fuzzy Sets		Prüfung (PR)	Pfaff, Hanebeck
SS 2020	7500329	Fuzzy Sets		Prüfung (PR)	Hanebeck
WS 20/21	7500011	Fuzzy Sets		Prüfung (PR)	Pfaff, Hanebeck

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

V

Fuzzy Sets

24611, SS 2020, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

In this module, the fundamental theory and practical applications of fuzzy sets are communicated. The course copes with fuzzy arithmetics, fuzzy logic, fuzzy relations, and fuzzy deduction. The representation of fuzzy sets and their properties are the theoretical foundation. Based on this theory, arithmetic and logical operations are axiomatically derived and analyzed. Furthermore, it is shown how arbitrary functions and relations are transferred into fuzzy sets. An application of the logic part of the module, fuzzy deduction, shows different approaches to applying rule-based systems on fuzzy sets. The final part of the course treats the problem of fuzzy control.

Literature

Hilfreiche Quellen werden im Skript und in den Vorlesungsfolien genannt.

T**6.150 Course: Geometric Optimzation [T-INFO-101267]**

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-100730 - Geometric Optimization](#)

Type
Oral examination

Credits
3

Recurrence
Irregular

Version
1

Events					
SS 2020	2400029	Geometrische Optimierung	2 SWS	Lecture (V)	Prautzsch
Exams					
SS 2020	7500230	Geometric Optimization		Prüfung (PR)	Prautzsch

T

6.151 Course: Global Optimization I [T-WIWI-102726]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Exams				
SS 2020	7900296_SS2020_NK	Global Optimization I	Prüfung (PR)	Stein

Competence Certificate

Please note: due to the research semester of Prof. Dr. Stein the lecture will not be offered in summer semester 2020.

Success is in the form of a written examination (60 min.) (according to § 4(2), 1 SPO).

The exam is offered in the lecture of semester and the following semester.

The success check can be done also with the success control for "Global optimization II". In this case, the duration of the written exam is 120 min.

Prerequisites

None

Recommendation

None

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.

T**6.152 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-101473 - Mathematical Programming](#)

Type	Credits	Recurrence	Version
Written examination	9	Each summer term	1

Exams				
SS 2020	7900300_SS2020_NK	Global Optimization I and II	Prüfung (PR)	Stein

Competence Certificate

Please note: due to the research semester of Prof. Dr. Stein the lectures will not be offered in summer semester 2020.
 The assessment of the lecture is a written examination (120 minutes) according to §4(2), 1 of the examination regulation.
 The examination is held in the semester of the lecture and in the following semester.

Prerequisites

None

Recommendation

None

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.

T

6.153 Course: Global Optimization II [T-WIWI-102727]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Exams				
SS 2020	7900297_SS2020_NK	Global Optimization II	Prüfung (PR)	Stein

Competence Certificate

Please note: due to the research semester of Prof. Dr. Stein the lecture will not be offered in summer semester 2020.

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation.

The examination is held in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of "Global optimization I". In this case, the duration of the written examination takes 120 minutes.

Prerequisites

None

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.


T**6.154 Course: Graph Partitioning and Graph Clustering in Theory and Practice [T-INFO-101295]**





Responsible: Prof. Dr. Peter Sanders
Dr. rer. nat. Torsten Ueckerdt

Organisation: KIT Department of Informatics

Part of: [M-INFO-100758 - Graph Partitioning and Graph Clustering in Theory and Practice](#)

Type	Credits	Recurrence	Version
Oral examination	4	Each summer term	2

Events					
WS 20/21	2400180	Graph Partitioning and Graph Clustering in Theory and Practice	3 SWS	Lecture (V) / 	Ueckerdt, Gottesbüren, Hamann

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

T**6.155 Course: Graph Partitioning and Graph Clustering in Theory and Practice - Practical [T-INFO-110999]**

Responsible: Angelika Lückert
Prof. Dr. Peter Sanders

Organisation: KIT Department of Informatics

Part of: [M-INFO-100758 - Graph Partitioning and Graph Clustering in Theory and Practice](#)

Type	Credits	Recurrence	Version
Examination of another type	1	Each summer term	1

T**6.156 Course: Graph Theory and Advanced Location Models [T-WIWI-102723]**

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)
[M-WIWI-102832 - Operations Research in Supply Chain Management](#)
[M-WIWI-103289 - Stochastic Optimization](#)

Type
Written examination

Credits
4,5

Recurrence
Irregular

Version
2

Exams				
SS 2020	7900334	Graph Theory and Advanced Location Models	Prüfung (PR)	Nickel

Competence Certificate

The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the lecture and the following lecture.

Prerequisites

None

Recommendation

Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

Annotation

The course is offered irregularly. Planned lectures for the next three years can be found in the internet at <http://dol.ior.kit.edu/english/Courses.php>.

T**6.157 Course: Hands-on Bioinformatics Practical [T-INFO-103009]**

Responsible: Prof. Dr. Alexandros Stamatakis
Organisation: KIT Department of Informatics
Part of: [M-INFO-101573 - Hands-on Bioinformatics Practical](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Irregular	3

T

6.158 Course: Heat Economy [T-WIWI-102695]

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101452 - Energy Economics and Technology](#)

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	1

Exams				
SS 2020	7981001	Heat Economy	Prüfung (PR)	Fichtner

Competence Certificate

The lecture will be suspended in summer semester 2019 and 2020 and will probably be offered again in summer semester 2021.
 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

See German version.

T**6.159 Course: Heterogeneous Parallel Computing Systems [T-INFO-101359]****Responsible:** Prof. Dr. Wolfgang Karl**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100822 - Heterogeneous Parallel Computing Systems](#)**Type**
Oral examination**Credits**
3**Recurrence**
Each winter term**Version**
1

Events					
WS 20/21	2424117	Heterogene parallele Rechensysteme	2 SWS	Lecture (V) / 	Karl
Exams					
SS 2020	7500216	Heterogeneous Parallel Computing Systems	Prüfung (PR)		Karl

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

T**6.160 Course: Human Brain and Central Nervous System: Anatomy, Information Transfer, Signal Processing, Neurophysiology and Therapy [T-INFO-101262]**

Responsible: Prof. Dr.-Ing. Rüdiger Dillmann
Hon.-Prof. Dr. Uwe Spetzger

Organisation: KIT Department of Informatics


Part of: M-INFO-100725 - Human Brain and Central Nervous System: Anatomy, Information Transfer, Signal Processing, Neurophysiology and Therapy





Type
Oral examination

Credits
3

Recurrence
Each term

Version
1



Events					
SS 2020	24678	Human Brain and Central Nervous System: Anatomy, Information Transfer, Signal Processing, Neurophysiology and Therapy	2 SWS	Lecture (V)	Spetzger
WS 20/21	24139	Human Brain and Central Nervous System: Anatomy, Information Transfer, Signal Processing, Neurophysiology and Therapy	2 SWS	Lecture (V) / 	Spetzger
Exams					
SS 2020	7500145	Human Brain and Central Nervous System: Anatomy, Information Transfer, Signal Processing, Neurophysiology and Therapy		Prüfung (PR)	Dillmann





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

T

6.161 Course: Human Factors in Security and Privacy [T-WIWI-109270]**Responsible:** Prof. Dr. Melanie Volkamer**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-104520 - Human Factors in Security and Privacy](#)
[M-WIWI-104812 - Information Systems: Engineering and Transformation](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	3

Events					
WS 20/21	2511554	Human Factors in Security and Privacy	2 SWS	Lecture (V) / 	Volkamer
WS 20/21	2511555	Übungen zu Human Factors in Security and Privacy	1 SWS	Practice (Ü) / 	Volkamer, Berens
Exams					
SS 2020	7900084	Human Factors in Security and Privacy (Registration until 13 July 2020)		Prüfung (PR)	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. Only those who have successfully participated in the exercises and the lecture will be admitted to the examination.

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

Prerequisites

1. Successful participation in the exercises. Successful means actively participating in the tasks and its discussions. One task may be missed.
2. Also participation in the lectures is required. One lecture may be missed.

Recommendation

The prior attendance of the lecture "Information Security" is strongly recommended.

Annotation

Some lectures are in English, some in German.

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

V

Human Factors in Security and Privacy2511554, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)**Lecture (V)**
Online**Content**

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.

Literature

- Usable Security: History, Themes, and Challenges (Synthesis Lectures on Information Security, Privacy, and Trust): Simson Garfinkel und Heather Richter Lipford. 2014
- Security and Usability: Designing Secure Systems that People Can Use von Lorrie Faith Cranor und Simson Garfinkel. 2005
- Melanie Volkamer, Karen Renaud: Mental Models - General Introduction and Review of Their Application to Human-Centred Security. In Number Theory and Cryptography (2013): 255-280: https://link.springer.com/chapter/10.1007/978-3-642-42001-6_18
- Paul Gerber, Marco Ghiglierie, Birgit Henhapl, Oksana Kulyk, Karola Marky, Peter Mayer, Benjamin Reinheimer, Melanie Volkamer: Human Factors in Security. In: Reuter C. (eds) Sicherheitskritische Mensch-Computer-Interaktion. Springer (2018) https://link.springer.com/chapter/10.1007/978-3-658-19523-6_5
- Bruce Schneier: Psychology of Security (2018): https://www.schneier.com/essays/archives/2008/01/the_psychology_of_se.html
- Ross Anderson: security /usability and psychology. In Security Engineering. <http://www.cl.cam.ac.uk/~rja14/Papers/SEv2-c02.pdf>
- Andrew Odlyzko: Economics, Psychology and Sociology of Security: <http://www.dtc.umn.edu/~odlyzko/doc/econ.psych.security.pdf>

T

6.162 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
Written examination

Credits
6

Recurrence
Each summer term

Version
2

Events					
SS 2020	24659	Human-Computer-Interaction	2 SWS	Lecture (V)	Exler, Beigl
Exams					
SS 2020	7500048	Human-Machine-Interaction		Prüfung (PR)	Beigl
WS 20/21	7500076	Human-Machine-Interaction		Prüfung (PR)	Beigl


T**6.163 Course: Human-Machine-Interaction in Anthropomatics: Basics [T-INFO-101361]**





Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Dr. Jürgen Geisler

Organisation: KIT Department of Informatics

Part of: [M-INFO-100824 - Human-Machine-Interaction in Anthropomatics: Basics](#)

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	2

Events					
WS 20/21	24100	Human-Machine-Interaction in Anthropomatics: Basics	2 SWS	Lecture (V) / 	Geisler
Exams					
WS 20/21	7500017	Human-Machine-Interaction in Anthropomatics: Basics		Prüfung (PR)	Beyerer, Geisler

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

T

6.164 Course: Human-Machine-Interaction Pass [T-INFO-106257]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: [M-INFO-100729 - Human Computer Interaction](#)

Type	Credits	Recurrence	Version
Completed coursework	0	Each summer term	1


Events					
SS 2020	2400095	Human-Computer-Interaction	1 SWS	Practice (Ü)	Beigl, Exler
SS 2020	24659	Human-Computer-Interaction	2 SWS	Lecture (V)	Exler, Beigl
Exams					
SS 2020	7500121	Human-Machine-Interaction		Prüfung (PR)	Beigl



T

6.165 Course: Humanoid Robots - Practical Course [T-INFO-105142]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: [M-INFO-102560 - Humanoid Robots - Practical Course](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each winter term	1

Events				
WS 20/21	24890	Humanoid Robotics Laboratory	2 SWS	Practical course (P) /  Asfour
Exams				
WS 20/21	7500149	Humanoid Robots - Practical Course	Prüfung (PR)	Asfour

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

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

V

Humanoid Robotics Laboratory

24890, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Practical course (P)
On-Site

Content

In this block course, a complex task will be implemented in a small team. The exercise addresses algorithmic questions in the context of humanoid robotics, such as active perception with stereo or depth cameras, grasping and manipulation planning, action representation with DMS, HMMs or splines, reproduction of motions, or active balancing with humanoid robots.

Learning Objectives:

The participant understands and knows how to address and structure a complex task in the context of humanoid robotics. The student is able to solve a complex programming task in a small team.

Should have attended the robotics lectures.

Basic knowledge about C/C++

Organizational issues

Die Erfolgskontrolle erfolgt in Form einer mündlichen Prüfung nach § 4 Abs. 2 Nr. 2 SPO.

Die Modulnote ist die Note der mündlichen Prüfung.

Zielgruppe: Das Praktikum richtet sich an Studierende der Informatik, Elektrotechnik, Maschinenbau, Mechatronik im Masterstudium sowie alle Interessenten an der Robotik.

Arbeitsaufwand: 90 h

Beschreibung:

Das Praktikum „Humanoide Roboter“ wird als begleitende Veranstaltung zu der Vorlesung „Anthropomatik: Humanoide Robotik“ angeboten. Die Grundlagen aus der Vorlesung werden in dieser Veranstaltung praktisch angewendet. Das Praktikum kann mit 2 SWS / 3 ECTS angerechnet werden. Dabei wird in jeder Woche ein anderer Versuch im Team bearbeitet. Die Versuche beinhalten vielseitige Themen, wie zum Beispieldie Simulation und Programmierung humanoider Roboter sowie Arbeiten mit Human Motion Capture. Das Praktikum richtet sich an Studierende der Informatik, Elektrotechnik, Maschinenbau, Mechatronik im Masterstudium sowie alle Interessenten an der Robotik.

T


6.166 Course: Image Data Compression [T-INFO-101292]





Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Dr. Alexey Pak

Organisation: KIT Department of Informatics

Part of: [M-INFO-100755 - Image Data Compression](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each winter term	1

Events					
WS 20/21	2400112	Image Data Compression	2 SWS	Lecture (V) / 	Beyerer, Pak
Exams					
SS 2020	7500002	Image Data Compression		Prüfung (PR)	Beyerer
WS 20/21	7500013	Image Data Compression		Prüfung (PR)	Beyerer

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

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

V

Image Data Compression

2400112, WS 20/21, 2 SWS, [Open in study portal](#)

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

Content

This module conveys to the students the theoretical and practical aspects of the principal stages in image data acquisition and compression. The discussion progresses from the coding of un-correlated sequential data streams to de-correlation of natural 2D images and to exploitation of temporal correlations in video data coding. Each considered technique is provided with a statistical justification and characterised with basic information-theoretic metrics.

In the end of the class, an outlook is given to non-conventional image-based information coding schemes (watermarking and steganography).

Educational objective:

The students will learn various kinds, sources, and uses of image-type data, and the forms of their compression. Students master the basic concepts of information theory, related to data communication and coding. Based on these concepts and general principles and characterization criteria, students are able to compare various schemes of image data representation and coding. Students have in-depth knowledge of a few selected algorithms of entropy coding, pre-coding, and 1D-signal de-correlation.

Students know 2D transform-based de-correlation methods, including Discrete Fourier Transform, Discrete Cosine Transform, Walsh-Hadamard Transform, and the Discrete Wavelet Transform and know how to use them in video coding by exploitation of temporal correlations.

Students understand the human visual system and the statistics of natural images. In addition, the students know two non-standard applications of image data coding: digital watermarking and steganography. As an exercise, students analyze several simple steganographic schemes.

T

6.167 Course: Incentives in Organizations [T-WIWI-105781]

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-101500 - Microeconomic Theory](#)
[M-WIWI-101505 - Experimental Economics](#)
[M-WIWI-101510 - Cross-Functional Management Accounting](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2573003	Incentives in Organizations	2 SWS	Lecture (V)	Nieken
SS 2020	2573004	Übung zu Incentives in Organizations	2 SWS	Practice (Ü)	Nieken, Mitarbeiter
Exams					
SS 2020	7900132	Incentives in Organizations		Prüfung (PR)	Nieken

Competence Certificate

The assessment of this course is a written examination (60 min). 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

Knowledge of microeconomics, game theory, and statistics is assumed.

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

V

Incentives in Organizations

2573003, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

The students acquire profound knowledge about the design and the impact of different incentive and compensation systems. Topics covered are, for instance, performance based compensation, team work, intrinsic motivation, multitasking, and subjective performance evaluations. We will use microeconomic or behavioral models as well as empirical data to analyze incentive systems. We will investigate several widely used compensation schemes and their relationship with corporate strategy. Students will learn to develop practical implications which are based on the acquired knowledge of this course.

Aim

The student

- develops a strategic understanding about incentives systems and how they work.
- analyzes models from personnel economics.
- understands how econometric methods can be used to analyze performance and compensation data.
- knows incentive schemes that are used in companies and is able to evaluate them critically.
- can develop practical implications which are based on theoretical models and empirical data from companies.
- understands the challenges of managing incentive and compensation systems and their relationship with 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

Slides, Additional case studies and research papers will be announced in the lecture.

Literature (complementary):

Managerial Economics and Organizational Architecture, Brickley / Smith / Zimmerman, McGraw-Hill Education, 2015

Behavioral Game Theory, Camerer, Russell Sage Foundation, 2003

Personnel Economics in Practice, Lazear / Gibbs, Wiley, 2014

Introduction to Econometrics, Wooldridge, Andover, 2014

Econometric Analysis of Cross Section and Panel Data, Wooldridge, MIT Press, 2010

T

6.168 Course: Information Processing in Sensor Networks [T-INFO-101466]


Responsible: Prof. Dr.-Ing. Uwe Hanebeck
Organisation: KIT Department of Informatics
Part of: [M-INFO-100895 - Information Processing in Sensor Networks](#)





Type
Oral examination

Credits
6

Recurrence
Irregular

Version
1

Events					
WS 20/21	24102	Information Processing in Sensor Networks	3 SWS	Lecture (V) / 	Noack, Mayer, Hanebeck
Exams					
SS 2020	7500011	Information Processing in Sensor Networks	Prüfung (PR)		Hanebeck, Noack
WS 20/21	7500030	Information Processing in Sensor Networks	Prüfung (PR)		Noack, Hanebeck

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

T

6.169 Course: Information Service Engineering [T-WIWI-106423]

Responsible: Prof. Dr. Harald Sack
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101456 - Intelligent Systems and Services](#)

Type
Written examination

Credits
4,5

Recurrence
Each summer term

Version
2

Events					
SS 2020	2511606	Information Service Engineering	2 SWS	Lecture (V)	Sack
SS 2020	2511607	Exercises to Information Service Engineering	1 SWS	Practice (Ü)	Sack
Exams					
SS 2020	7900070	Information Service Engineering (Registration until 13 July 2020)	Prüfung (PR)		Sack

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 (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

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

V

Information Service Engineering

2511606, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content**- Information, Natural Language and the Web****- Natural Language Processing**

- NLP and Basic Linguistic Knowledge
- NLP Applications, Techniques & Challenges
- Evaluation, Precision and Recall
- Regular Expressions and Automata
- Tokenization
- Language Model and N-Grams
- Part-of-Speech Tagging

- Knowledge Graphs

- Knowledge Representations and Ontologies
- Resource Description Framework (RDF) as simple Data Model
- Creating new Models with RDFS
- Querying RDF(S) with SPARQL
- More Expressivity via Web Ontology Language (OWL)
- From Linked Data to Knowledge Graphs
- Wikipedia, DBpedia, and Wikidata
- Knowledge Graph Programming

- Basic Machine Learning

- Machine Learning Fundamentals
- Evaluation and Generalization Problems
- Linear Regression
- Decision Trees
- Unsupervised Learning
- Neural Networks and Deep Learning

- ISE Applications

- From Data to Knowledge
- Data Mining, Information Visualization and Knowledge Discovery
- Semantic Search
- Exploratory Search
- Semantic Recommender Systems

Learning objectives:

- The students know the fundamentals and measures of information theory and are able to apply those in the context of Information Service Engineering.
- The students have basic skills of natural language processing and are enabled to apply natural language processing technology to solve and evaluate simple text analysis tasks.
- The students have fundamental skills of knowledge representation with ontologies as well as basic knowledge of Semantic Web and Linked Data technologies. The students are able to apply these skills for simple representation and analysis tasks.
- The students have fundamental skills of information retrieval and are enabled to conduct and to evaluate simple information retrieval tasks.
- The students apply their skills of natural language processing, Linked Data engineering, and Information Retrieval to conduct and evaluate simple knowledge mining tasks.
- The students know the fundamentals of recommender systems as well as of semantic and exploratory search.

Literature

- D. Jurafsky, J.H. Martin, Speech and Language Processing, 2nd ed. Pearson Int., 2009.
- S. Hitzler, S. Rudolph, Foundations of Semantic Web Technologies, Chapman / Hall, 2009.
- R. Baeza-Yates, B. Ribeiro-Neto, Modern Information Retrieval, 2nd ed., Addison Wesley, 2010.
- S. Marsland, Machine Learning - An Algorithmic Perspective, 2nd ed., CRC Press, 2015

T**6.170 Course: Innovation Management: Concepts, Strategies and Methods [T-WIWI-102893]**

Responsible: Prof. Dr. Marion Weissenberger-Eibl
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	1

Events					
SS 2020	2545100	Innovation Management: Concepts, Strategies and Methods	2 SWS	Lecture (V)	Weissenberger-Eibl
Exams					
SS 2020	7900144	Innovation Management: Concepts, Strategies and Methods	Prüfung (PR)		Weissenberger-Eibl
SS 2020	7900145	Innovation Management: Concepts, Strategies and Methods	Prüfung (PR)		Weissenberger-Eibl

Competence Certificate

The assessment consists of a written exam (60 minutes). The exam takes place in every summer semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

None

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

V**Innovation Management: Concepts, Strategies and Methods**

2545100, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)**Content**

The course 'Innovation Management: Concepts, Strategies and Methods' offers scientific concepts which facilitate the understanding of the different phases of the innovation process and resulting strategies and appropriate methodologies suitable for application. The concepts refer to the entire innovation process so that an integrated perspective is made possible. This is the basis for the teaching of strategies and methods which fulfil the diverse demands of the complex innovation process. The course focuses particularly on the creation of interfaces between departments and between various actors in a company's environment and the organisation of a company's internal procedures. In this context a basic understanding of knowledge and communication is taught in addition to the specific characteristics of the respective actors. Subsequently methods are shown which are suitable for the profitable and innovation-led implementation of integrated knowledge.

Aim: Students develop a differentiated understanding of the different phases and concepts of the innovation process, different strategies and methods in innovation management.

Organizational issues

Die **Vorlesung** wird bis auf Weiteres als interaktive **online Veranstaltung** durchgeführt. Die Vorlesung startet am 23.4. und findet donnerstags 09:45 - 11:15 statt. **Wichtig!** Bitte treten Sie dem [ILIAS-Kurs zur Vorlesung](#) bei, damit wir Ihnen weitere Informationen mitteilen können.

Literature

Eine ausführliche Literaturliste wird mit den Vorlesungsunterlagen zur Verfügung gestellt.

Eine Einführung bei: Vahs, D./Brem, A. (2013): Innovationsmanagement. Von der Idee zur erfolgreichen Vermarktung, 4. Auflage, Stuttgart 2013.

T

6.171 Course: Innovation Processes Live [T-WIWI-110234]

Responsible: Dr. Daniela Beyer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Irregular	1

Competence Certificate

Alternative exam assessments (§4(2), 3 SPO). The grade consists of an exposé (15%), a guideline interview or an analysis tool (25%), a group presentation of the results (20%) and a seminar paper (40%).

Prerequisites

None.

Recommendation

Prior attendance of the course Innovation Management [2545015] is recommended.

T

6.172 Course: Innovation Theory and Policy [T-WIWI-102840]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101478 - Innovation and Growth](#)
[M-WIWI-101514 - Innovation Economics](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2560236	Innovationtheory and -policy	SWS	Lecture (V)	Ott
SS 2020	2560237		1 SWS	Practice (Ü)	Ott, Eraydin
Exams					
SS 2020	7900107	Innovationtheory and -Policy		Prüfung (PR)	Ott

Competence Certificate

The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

A bonus can be earned through a short written homework and its presentation in the exercise. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by a maximum of 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 micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

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

V

Innovationtheory and -policy

2560236, SS 2020, SWS, Language: German/English, [Open in study portal](#)

Lecture (V)

Content**Learning objectives:**

Students shall be given the ability to

- identify the importance of alternative incentive mechanisms for the emergence and dissemination of innovations
- understand the relationships between market structure and the development of innovation
- explain, in which situations market interventions by the state, for example taxes and subsidies, can be legitimized, and evaluate them in the light of economic welfare

Course content:**The course covers the following topics:**

- Incentives for the emergence of innovations
- Patents
- Diffusion
- Impact of technological progress
- Innovation Policy

Recommendations:

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

Workload:

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

Exam description:

The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Students will be given the opportunity of writing and presenting a short paper during the lecture time to achieve a bonus on the exam grade. If the mandatory credit point exam is passed, the awarded bonus points will be added to the regular exam points. A deterioration is not possible by definition, and a grade does not necessarily improve, but is very likely to (not every additional point improves the total number of points, since a grade can not become better than 1). The voluntary elaboration of such a paper can not countervail a fail in the exam.

Literature**Auszug:**

- Aghion, P., Howitt, P. (2009), The Economics of Growth, MIT Press, Cambridge MA.
- de la Fuente, A. (2000), Mathematical Methods and Models for Economists. Cambridge University Press, Cambridge, UK.
- Klodt, H. (1995), Grundlagen der Forschungs- und Technologiepolitik. Vahlen, München.
- Linde, R. (2000), Allokation, Wettbewerb, Verteilung - Theorie, UNIBUCH Verlag, Lüneburg.
- Ruttan, V. W. (2001), Technology, Growth, and Development. Oxford University Press, Oxford.
- Scotchmer, S. (2004), Incentives and Innovation, MIT Press.
- Tirole, Jean (1988), The Theory of Industrial Organization, MIT Press, Cambridge MA.


T**6.173 Course: Innovative Concepts for Programming Industrial Robots [T-INFO-101328]****Responsible:** Prof. Dr.-Ing. Björn Hein**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100791 - Innovative Concepts for Programming Industrial Robots](#)





Type
Oral examination

Credits
4

Recurrence
Each winter term

Version
1

Events					
WS 20/21	24179	Innovative Concepts for Programming Industrial Robots	2 SWS	Lecture (V) / 	Hein

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

T

6.174 Course: Integrated Network and Systems Management [T-INFO-101284]

Responsible: Prof. Dr. Bernhard Neumair
Organisation: KIT Department of Informatics
Part of: [M-INFO-100747 - Integrated Network and Systems Management](#)

Type	Credits	Recurrence	Version
Oral examination	4	Each summer term	1

Events					
SS 2020	2400004	Integrated Network and Systems Management	2 SWS	Lecture (V)	Neumair
Exams					
SS 2020	7500144	Integrated Network and Systems Management		Prüfung (PR)	Neumair

T

6.175 Course: Intelligent Agents and Decision Theory [T-WIWI-110915]**Responsible:** Prof. Dr. Andreas Geyer-Schulz**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-101470 - Data Science: Advanced CRM](#)
[M-WIWI-104814 - Information Systems: Analytical and Interactive Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2540537	Intelligent Agents and Decision Theory	SWS	Lecture (V)	Geyer-Schulz
SS 2020	2540538	Übung zu Intelligent Agents and Decision Theory	SWS	Practice (Ü)	Schweizer
Exams					
SS 2020	7900306	Intelligent Agents and Decision Theory		Prüfung (PR)	Geyer-Schulz

Competence Certificate

Oral (30 minutes) or written examination (60 minutes). The exam is held in each semester and can be repeated at any regular examination date. Details of the grading system and any exam bonus that may be achieved from the practice are announced in the course.

Prerequisites

None

Recommendation

We assume knowledge in statistics, operations research and microeconomics as taught in the Bachelor program (VWL I, Operations Research I + II, Statistics I + II) and a familiarity with preferably the Python programming language.

Annotation

new lecture starting summer semester 2020

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

V

Intelligent Agents and Decision Theory2540537, SS 2020, SWS, Language: English, [Open in study portal](#)**Lecture (V)**

Content

The key assumption of this lecture is that the concept of artificial intelligence is inseparably linked to the economic concept of rationality of agents. We consider different classes of decision problems - decisions under certainty, risk and uncertainty - from an economic, managerial and AI-engineering perspective:

From an economic point of view, we analyze how to act rationally in these situations based on classic utility theory. In this regard, the course also introduces the relevant parts of decision theory for dealing with

- multiple conflicting objectives,
- incomplete, risky and uncertain information about the world,
- assessing utility functions, and
- quantifying the value of information ...

From an engineering perspective, we discuss how to develop practical solutions for these decision problems, using appropriate AI components. We introduce

- a general, agent-based design framework for AI systems,

as well as AI methods from the fields of

- search (for decisions under certainty),
- inference (for decisions under risk) and
- learning (for decisions under uncertainty).

Where applicable, the course highlights the theoretical ties of these methods with decision theory.

We conclude with a discussion of ethical and philosophical issues concerning the development and use of AI.

Learning objectives

Students are able to design, analyze, implement, and evaluate intelligent agents.

Lecture Outline

1. Introduction: Artificial intelligence and the economic concept of rationality
2. Intelligent Agents: A general, agent-based design framework for AI systems
3. Decision under certainty: Assessing utility functions for decisions with multiple objectives
4. Search: Linear programming for decisions under certainty
5. Decisions under risk: The expected utility principle
6. Information systems: Improving economic decisions under risk
7. Inference: Bayesian networks for decisions under risk
8. Information Learning objectives value: When should an agent gather new information?
9. Decisions under uncertainty: Complete lack of information
10. Learning: Statistical learning of bayesian networks
11. Learning: Supervised learning with neural networks
12. Learning: Reinforcement learning
13. Learning: Preference-based reinforcement learning
14. Discussion: Ethical and philosophical issues

Note: This rough outline may be subject to change.

Literature**Basic literature (by lecture):**

1. Russell & Norvig (2016, chapter 1), Bamberg et al. (2019, chapters 1 & 2)
2. Russell & Norvig (2016, chapter 2)
3. Keeney & Raiffa (1993, chapter 3)
4. Nickel et al. (2014, chapter 1) [German], Russell & Norvig (2016, chapter 3)
5. Bamberg et al. (2019, chapter 4), Fishburn (1988)
6. Bamberg et al. (2019, chapter 6)
7. Russell & Norvig (2016, chapters 13, 14, 16)
8. Russell & Norvig (2016, chapter 16), Bamberg et al. (2019, chapter 6)
9. Bamberg et al. (2019, chapter 5)
10. Russell & Norvig (2016, chapter 20)
11. Goodfellow et al. (2016, chapter 6)
12. Sutton & Barto (2018, chapter 3)
13. Wirth et al. (2017)
14. Russell & Norvig (2016, chapter 26)

Detailed references:

Bamberg, Coenenberg & Krapp (2019). Betriebswirtschaftliche Entscheidungslehre (16th ed.). Verlag Franz Vahlen GmbH.

Fishburn (1988). Nonlinear preference and utility theory. Baltimore: Johns Hopkins University Press.

Goodfellow, Bengio & Courville (2016). Deep learning. Cambridge: MIT press.

Keeney & Raiffa (1993). Decisions with multiple objectives: preferences and value trade-offs. Cambridge University Press.

Nickel, S., Stein, O., & Waldmann, K.-H. (2014). Operations Research (2nd ed.). Springer Berlin Heidelberg.

Russell & Norvig (2016). Artificial Intelligence: A Modern Approach (3rd Global Edition). Pearson.

Sutton & Barto (2018). Reinforcement learning: An introduction. Cambridge: MIT press.

Wirth, Akrou, Neumann & Fürnkranz (2017). A Survey of Preference-Based Reinforcement Learning Methods. Journal of Machine Learning Research, 18(1), 1–46.

T

6.176 Course: Intelligent CRM Architectures [T-WIWI-103549]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101470 - Data Science: Advanced CRM](#)
[M-WIWI-104814 - Information Systems: Analytical and Interactive Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	3

Events					
WS 20/21	2540525	Intelligent Agent Architectures	2 SWS	Lecture (V)	Geyer-Schulz
WS 20/21	2540526	Übung zu Intelligent Agent Architectures	1 SWS	Practice (Ü)	Nazemi
Exams					
SS 2020	7900311	Intelligent CRM Architectures (Nachklausur WS 2019/2020)		Prüfung (PR)	Geyer-Schulz

Competence Certificate

This lecture will be offered for the last time in winter semester 2019/20.

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 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.

Prerequisites

None

Recommendation

It is recommended to additionally review the Bachelor-level lecture "Customer Relationship Management" from the module "CRM and Servicemanagement".

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

V

Intelligent Agent Architectures

2540525, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content**Course content:**

The lecture is structured in three parts:

In the first part the methods used for architecture design are introduced (system analysis, UML, formal specification of interfaces, software and analysis patterns, and the separation in conceptual and IT-architectures. The second part is dedicated to learning architectures and machine learning methods. The third part presents examples of learning CRM-Architectures.

Workload:

The total workload for this course is approximately 135 hours (4.5 credits):

Time of attendance

- Attending the lecture: 15 x 90min = 22h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m
- Examination: 1h 00m

Self-study

- Preparation and wrap-up of the lecture: 15 x 180min = 45h 00m
- Preparing the exercises: 25h 00m
- Preparation of the examination: 31h 00m

Sum: 135h 00m

Learning Goals:

Students have special knowledge of software architectures and of the methods which are used in their development (Systems analysis, formal methods for the specification of interfaces and algebraic semantic, UML, and, last but not least, the mapping of conceptual architectures to IT architectures.

Students know important architectural patterns and they can – based on their CRM knowledge – combine these patterns for innovative CRM applications.

Assessment:

The assessment consists of a written exam of 1-hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation.

The course is considered successfully taken if at least 50 out of 100 points are acquired in the written exam. In this case, all additional points (up to 10) from exercise work will be added.

Grade: Minimum points

- 1,0: 95
- 1,3: 90
- 1,7: 85
- 2,0: 80
- 2,3: 75
- 2,7: 70
- 3,0: 65
- 3,3: 60
- 3,7: 55
- 4,0: 50
- 5,0: 0

The grade consists of approximately 91% of exam points and 9% of exercise points.

Literature

- P. Clements u. a., *Documenting Software Architectures. Views and Beyond*. Upper Saddle River: Addison-Wesley, 2011.
- Fowler, *Patterns of Enterprise Application Architecture*. Amsterdam: Addison-Wesley Longman, 2002.
- S. Russell und P. Norvig, *Artificial Intelligence: A Modern Approach*, 3. Aufl. Harlow Essex England: Pearson New International Edition, 2014.
- V. N. Vapnik, *The Nature of Statistical Learning Theory*. New York: Springer, 1995.

T**6.177 Course: Interactive Computer Graphics [T-INFO-101269]**

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher
Organisation: KIT Department of Informatics
Part of: [M-INFO-100732 - Interactive Computer Graphics](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each summer term	1

Events					
SS 2020	24679	Interaktive Computergrafik	2 SWS	Lecture (V)	Peters
Exams					
SS 2020	7500123	Interactive Computer Graphics		Prüfung (PR)	Dachsbacher

T


6.178 Course: International Business Development and Sales [T-WIWI-110985]


Responsible: Erice Casenave
Prof. Dr. Martin Klarmann
Prof. Dr. Orestis Terzidis

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-105312 - Marketing and Sales Management](#)

Type	Credits	Recurrence	Version
Examination of another type	6	see Annotations	1

Events					
WS 20/21	2500003	International Business Development and Sales	4 SWS	Block (B) / 	Klarmann, Terzidis, Casenave

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

Competence Certificate

Non exam assessment. The grade is based on the presentation, the subsequent discussion and the written elaboration.

Annotation

Due to the Corona situation it is currently unclear whether the seminar can be offered in WS20 / 21.

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

V

International Business Development and Sales

2500003, WS 20/21, 4 SWS, Language: English, [Open in study portal](#)

**Block (B)
On-Site**

Content

This course is offered as part of the EUCOR programme in cooperation with EM Strasbourg. Max. 10 students of KIT and max. 10 students of EM Strasbourg will develop a sales presentation in tandems (teams of 2). This is based on the value proposition of a business model.

- An application is required to participate in this event. The application phase usually takes place at the beginning of the lecture period. Further information on the application process can be found on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the start of the lecture period.

Total workload for 6 ECTS: about 180 hours.

**6.179 Course: International Finance [T-WIWI-102646]**

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

Type	Credits	Recurrence	Version
Written examination	3	see Annotations	1

Events					
SS 2020	2530570	International Finance	2 SWS	Lecture (V)	Walter, Uhrig-Homburg
WS 20/21	2530570	International Finance	2 SWS	Lecture (V) /	Walter, Uhrig-Homburg
Exams					
SS 2020	7900097	International Finance		Prüfung (PR)	Uhrig-Homburg

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

Competence Certificate

See German version.

Prerequisites

None

Recommendation

None

Annotation

The course will not be offered in the summer semester 2020 as originally planned, but only in the winter semester 2020/2021.
The course is offered as a 14-day or block course.

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

**International Finance**

2530570, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Organizational issues

Diese Veranstaltung findet im WS 20/21 statt.

Literature**Weiterführende Literatur:**

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

**International Finance**

2530570, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)
On-Site**

Organizational issues

Blockveranstaltung

am 11.11.20 15:45-19:00 Uhr

Literature


Weiterführende Literatur:




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

T**6.180 Course: International Management in Engineering and Production [T-WIWI-102882]**

Responsible: Dr. Henning Sasse
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101412 - Industrial Production III](#)
[M-WIWI-101471 - Industrial Production II](#)

Type	Credits	Recurrence	Version
Written examination	3,5	Each winter term	1

Events					
WS 20/21	2581956	International Management in Engineering and Production	2 SWS	Lecture (V) / 	Sasse
Exams					
SS 2020	7981956	International Management in Engineering and Production	Prüfung (PR)		Schultmann

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

Competence Certificate

The examination will be in form of a written exam acc. to §4(2), 1 ER. Exams are offered in every semester and can be re-examined at every ordinary examination date.

Prerequisites

None

Recommendation

None

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

V**International Management in Engineering and Production**

2581956, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

- Fundamentals of international business
- Forms of international cooperation and value creation
- Site selection
- Cost driven internationalization and site selection
- Sales and customer driven internationalization and site selection
- Challenges, risks and risk mitigation
- Management of international production sites
- Types and case studies of international production

Organizational issues

Blockveranstaltung

Im Seminarraum-West beim IIP, Termine siehe Institutshomepage

Literature

Wird in der Veranstaltung bekannt gegeben.

T

6.181 Course: International Selling – EUCOR [T-WIWI-110381]

Responsible: Erice Casenave
Prof. Dr. Martin Klarmann

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Once	1

Competence Certificate

Non exam assessment according to § 4 paragraph 2 Nr. 3 of the examination regulation (presentation). The grade is based on the presentation and the subsequent discussion.

Prerequisites

The courses "Business Planning for Founders - EUCOR" and the course "International Selling - EUCOR" must be taken together.

Annotation


An application is required to participate in this course. The application phase usually takes place at the beginning of the lecture period. Further information on the application process can be found on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the start of the lecture period.





Please note that the courses "Business Planning for Founders - EUCOR" (3 ECTS) and "International Selling - EUCOR" (3 ECTS) can only be taken together (6 ECTS in total).

T**6.182 Course: Internet Law [T-INFO-101307]**

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [M-INFO-101215 - Intellectual Property Law](#)
[M-INFO-101242 - Governance, Risk & Compliance](#)

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	2

Events					
WS 20/21	24354	Internet Law	2 SWS	Lecture (V) / 	Dreier
Exams					
SS 2020	7500057	Internet Law		Prüfung (PR)	Dreier, Matz

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

T

6.183 Course: Internet of Everything [T-INFO-101337]


Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [M-INFO-100800 - Internet of Everything](#)
[M-WIWI-104812 - Information Systems: Engineering and Transformation](#)





Type
Oral examination

Credits
4

Recurrence
Each winter term

Version
1

Events					
WS 20/21	24104	Internet of Everything	2 SWS	Lecture (V) / 	Zitterbart, Friebe, Jung
Exams					
SS 2020	7500071	Internet of Everything		Prüfung (PR)	Zitterbart
WS 20/21	7500009	Internet of Everything		Prüfung (PR)	Zitterbart

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

T

6.184 Course: Introduction to Bayesian Statistics for Analyzing Data [T-WIWI-110918]

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103117 - Data Science: Data-Driven Information Systems](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Once	1

Events					
SS 2020	2572175	Introduction to Bayesian Statistics for Analyzing Data	2 SWS	Lecture (V)	Scheibehenne
Exams					
SS 2020	7900251	Introduction to Bayesian Statistics for Analyzing Data		Prüfung (PR)	Scheibehenne

Competence Certificate

Grades will be based on active participation (50%) and homework assignments (50%).

Prerequisites

Participants should already have a basic knowledge of R and standard frequentist statistical tests. Please bring your own Laptop with you as we will be using R for several hands-on examples and exercises during the class. We will mainly work with the book "Statistical Rethinking. A Bayesian Course with Examples in R and Stan" by Richard McElrath. Students are advised to obtain the book before the class starts.

Annotation

Due to its interactive nature, participation will be limited to 10 students. If you want to participate, please send a short email to scheibehenne@kit.edu until Thursday, the 23rd of April in which you outline why you are interested in this class and what your expectations are.

The class will consist of three day-long sessions from 9:00 (s.t.) to 18:00. The first session will be held on Thursday, the 7th of May 2020. The second session will be on Thursday, the 28th of May. The third session will be on Thursday, the 18th of June. The classroom will be communicated to registered students in advance. In case classrooms will be closed due to the Corona virus, the class will be taught online and the schedule will be adapted.

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

V

Introduction to Bayesian Statistics for Analyzing Data

2572175, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content**Goal**

The goal of this class is to introduce Bayesian statistics as a viable alternative to conventional Null-Hypothesis significance testing (NHST) and the calculation of p-values. The class introduces the theoretical background of Bayesian statistics and its advantages over NHST. Based on this, students will work through hands-on approaches for analyzing various empirical data using Bayesian statistics. These analyses will mainly be conducted with the statistics software R and JASP. The class provides participants with the necessary skills to evaluate and interpret the results of published Bayesian analyses and to use the method for testing hypotheses and estimating model parameters based on empirical data. There will be regular reading and homework assignments.

Requirements

Participants should already have a basic knowledge of R and standard frequentist statistical tests. Please bring your own Laptop with you as we will be using R for several hands-on examples and exercises during the class. We will mainly work with the book "Statistical Rethinking. A Bayesian Course with Examples in R and Stan" by Richard McElrath. Students are advised to obtain the book before the class starts.

Schedule

The class will consist of three day-long sessions from 9:00 (s.t.) to 18:00. The first session will be held on Thursday, the 7th of May 2020. The second session will be on Thursday, the 28th of May. The third session will be on Thursday, the 18th of June. The classroom will be communicated to registered students in advance. In case classrooms will be closed due to the Corona virus, the class will be taught online and the schedule will be adapted.

Grading

Grades will be based on active participation (50%) and homework assignments (50%).

Registration and number of participants

Due to its interactive nature, participation will be limited to 10 students. If you want to participate, please send a short email to scheibehenne@kit.edu until Thursday, the 23rd of April in which you outline why you are interested in this class and what your expectations are.

Literature

McElrath, R. (2016). Statistical Rethinking. A Bayesian Course with Examples in R and Stan. Taylor & Francis Group. (main literature)


Kruschke, J. (2014). Doing Bayesian Data Analysis: A Tutorial Introduction with R. Academic Press. (additional literature)


T

6.185 Course: Introduction to Bioinformatics for Computer Scientists [T-INFO-101286]

Responsible: Prof. Dr. Alexandros Stamatakis
Organisation: KIT Department of Informatics
Part of: [M-INFO-100749 - Introduction to Bioinformatics for Computer Scientists](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each winter term	1

Events					
WS 20/21	2400055	Introduction to Bioinformatics for Computer Scientists	2 SWS	Lecture (V) / 	Stamatakis
Exams					
WS 20/21	7500057	Introduction to Bioinformatics for Computer Scientists		Prüfung (PR)	Stamatakis

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

Recommendation

Grundlegende Kenntnisse in den Bereichen der theoretischen Informatik (Algorithmen, Datenstrukturen) und der technischen Informatik (sequentielle Optimierung in C oder C++, Rechnerarchitekturen, parallele Programmierung, Vektorprozessoren) werden vorausgesetzt.

T

6.186 Course: Introduction to Stochastic Optimization [T-WIWI-106546]

Responsible: Prof. Dr. Steffen Rebennack

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-102832 - Operations Research in Supply Chain Management](#)
[M-WIWI-103289 - Stochastic Optimization](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2550470	Einführung in die Stochastische Optimierung	2 SWS	Lecture (V)	Rebennack
SS 2020	2550471	Übung zur Einführung in die Stochastische Optimierung	1 SWS	Practice (Ü)	Rebennack, Sinske
SS 2020	2550474	Rechnerübung zur Einführung in die Stochastische Optimierung	SWS	Practice (Ü)	Rebennack, Sinske
Exams					
SS 2020	7900272	Introduction to Stochastic Optimization		Prüfung (PR)	Rebennack

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The exam takes place in every the semester.

Prerequisites

None.

T

6.187 Course: Introduction to Video Analysis [T-INFO-101273]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: [M-INFO-100736 - Introduction to Video Analysis](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	1

Events					
SS 2020	24684	Introduction to Video Analysis	2 SWS	Lecture (V)	Arens
Exams					
SS 2020	7500031	Introduction to Video Analysis		Prüfung (PR)	Beyerer, Arens
WS 20/21	7500099	Introduction to Video Analysis		Prüfung (PR)	Beyerer, Arens

T**6.188 Course: IT- Security Law [T-INFO-109910]**

Responsible: apl. Prof. Dr. Oliver Raabe
Organisation: KIT Department of Informatics
Part of: [M-INFO-101242 - Governance, Risk & Compliance](#)

Type	Credits	Recurrence	Version
Written examination	3	Irregular	1

T

6.189 Course: IT-Security Management for Networked Systems [T-INFO-101323]

Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: [M-INFO-100786 - IT-Security Management for Networked Systems](#)
[M-WIWI-101458 - Ubiquitous Computing](#)
[M-WIWI-104812 - Information Systems: Engineering and Transformation](#)

Type
Oral examination

Credits
5

Recurrence
Each winter term

Version
1

Exams				
SS 2020	7500599	IT-Security Management for Networked Systems	Prüfung (PR)	Hartenstein

T

6.190 Course: Joint Entrepreneurship Summer School [T-WIWI-109064]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Irregular	1

Events					
SS 2020	2545021	Joint Entrepreneurship School	SWS	Seminar (S)	Terzidis, Ntagiakou, Kleinn
Exams					
SS 2020	7900346	Joint Entrepreneurship Summer School		Prüfung (PR)	Terzidis

Competence Certificate

The learning control of the program (Summer School) consists of two parts:

A) Investor Pitch:

Based on a presentation (investor pitch) in front of a jury, the insights gained and developed during the course of the event are presented and the business idea presented. Among other things, the presentation performance of the team, the structured content and the logical consistency of the business idea are evaluated. The exact evaluation criteria will be announced in the course.

B) Written elaboration:

The second part of the assessment is a written report. The iterative knowledge gain of the entire event is systematically logged and can be further supplemented by the contents of the presentation. The report documents key action steps, applied methods, findings, market analyzes and interviews and prepares them in writing. The exact structure and requirements will be announced in the course.

The grade consists of 50% presentation performance and 50% written preparation.

Prerequisites

The Summer School is aimed at master students of KIT. Prerequisite is the participation in the selection process.

Recommendation

We recommend basic business knowledge, the lecture Entrepreneurship as well as openness and interest in intercultural exchange. Solid knowledge of the English language is an advantage.

Annotation

The working language during the Summer School is English. A one-week stay in China is part of the Summer School.

T**6.191 Course: Judgment and Decision Making [T-WIWI-111099]**

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-105312 - Marketing and Sales Management](#)

Type	Credits	Recurrence	Expansion	Version
Written examination	4,5	Once	1 terms	1

Events					
WS 20/21	2540440	Judgment and Decision Making	SWS	Lecture (V)	Scheibehenne

Competence Certificate

The grade will be based on the written exam (60 minutes) at the end of the semester.

T

6.192 Course: KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics [T-WIWI-111109]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101446 - Market Engineering](#)
[M-WIWI-103118 - Data Science: Data-Driven User Modeling](#)
[M-WIWI-104080 - Designing Interactive Information Systems](#)

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

Competence Certificate

Non exam assessment. Grading will be based on a continuous basis throughout the semester. The assessment consists of:

- A written paper, and
- a group presentation with subsequent discussion and question and answer session of 30 minutes.

For particularly active and constructive participation in the discussions of other papers during the final presentation, a bonus of one grade level (0.3 or 0.4) can be achieved on the passed exam. Details on the grading will be announced at the beginning of the event.

Annotation

Due to the laboratory capacity and in order to ensure an optimal supervision of the project groups, the number of participants is limited. Places are allocated according to preferences and suitability for the topics. In particular, previous knowledge in the field of experimental economics plays a role.



The course will be offered starting in the summer semester 2021.





T

6.193 Course: Knowledge Discovery [T-WIWI-102666]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101456 - Intelligent Systems and Services](#)
[M-WIWI-105366 - Artificial Intelligence](#)
[M-WIWI-105368 - Web and Data Science](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 20/21	2511302	Knowledge Discovery	2 SWS	Lecture (V) / 	Färber
WS 20/21	2511303	Exercises to Knowledge Discovery	1 SWS	Practice (Ü) / 	Färber, Saier
Exams					
SS 2020	7900039	Knowledge Discovery (Registration until 13 July 2020)		Prüfung (PR)	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.

Students can be awarded a bonus on their final grade if they successfully complete special assignments.

Prerequisites

None

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

V

Knowledge Discovery

2511302, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

The lecture gives an overview of approaches of machine learning and data mining for knowledge acquisition from large data sets. These are examined especially with respect to algorithms, applicability to different data representations and the use in real application scenarios.

Knowledge Discovery is an established research area with a large community that investigates methods for discovering patterns and regularities in large amounts of data, including unstructured text. A variety of methods exist to extract patterns and provide previously unknown insights. This information can be predictive or descriptive.

The lecture gives an overview of Knowledge Discovery. Specific techniques and methods, challenges and current and future research topics in this research area will be taught.

Contents of the lecture cover the entire machine learning and data mining process with topics on supervised and unsupervised learning and empirical evaluation. Covered learning methods range from classical approaches like decision trees, support vector machines and neural networks to selected approaches from current research. Learning problems considered include feature vector-based learning and text mining.

Learning objectives:

Students

- know fundamentals of Machine Learning, Data Mining and Knowledge Discovery.
- are able to design, train and evaluate adaptive systems.
- conduct Knowledge Discovery projects in regards to algorithms, representations and applications.

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

- T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning: Data Mining, Inference, and Prediction (<http://www-stat.stanford.edu/~tibs/ElemStatLearn/>)
- T. Mitchell. Machine Learning. 1997
- M. Berhold, D. Hand (eds). Intelligent Data Analysis - An Introduction. 2003
- P. Tan, M. Steinbach, V. Kumar: Introduction to Data Mining, 2005, Addison Wesley

**Exercises to Knowledge Discovery**2511303, WS 20/21, 1 SWS, Language: English, [Open in study portal](#)**Practice (Ü)
Online****Content**

The exercises are based on the lecture Knowledge Discovery. Several exercises are covered, which take up and discuss in detail the topics covered in the lecture Knowledge Discovery. Practical examples are demonstrated to the students to enable a knowledge transfer of the theoretical aspects learned into practical application.

Contents of the lecture cover the entire machine learning and data mining process with topics on monitored and unsupervised learning processes and empirical evaluation. The learning methods covered range from classical approaches like decision trees, support vector machines and neural networks to selected approaches from current research. Learning problems considered include feature vector-based learning and text mining.

Learning objectives:

Students

- know fundamentals of Machine Learning, Data Mining and Knowledge Discovery.
- are able to design, train and evaluate adaptive systems.
- conduct Knowledge Discovery projects in regards to algorithms, representations and applications.

Literature

- T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning: Data Mining, Inference, and Prediction (<http://www-stat.stanford.edu/~tibs/ElemStatLearn/>)
- T. Mitchell. Machine Learning. 1997
- M. Berhold, D. Hand (eds). Intelligent Data Analysis - An Introduction. 2003
- P. Tan, M. Steinbach, V. Kumar: Introduction to Data Mining, 2005, Addison Wesley

T**6.194 Course: Lab Course Heterogeneous Computing [T-INFO-108447]**

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: [M-INFO-104072 - Lab Course Heterogeneous Computing](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Each summer term	1

T**6.195 Course: Lab Course: Natural Language Processing and Software Engineering [T-INFO-106239]****Responsible:** Prof. Dr. Walter Tichy**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-103138 - Lab Course: Natural Language Processing and Software Engineering](#)

Type
Examination of another type

Credits
5

Recurrence
Each winter term

Version
1

Events					
WS 20/21	2400082	Lab Course: Natural Language Processing and Software Engineering	4 SWS	Practical course (P) / 3	Koziolek, Hey, Weigelt

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

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

V**Lab Course: Natural Language Processing and Software Engineering**2400082, WS 20/21, 4 SWS, Language: German, [Open in study portal](#)
Practical course (P)
Blended (On-Site/Online)
Organizational issues


Das Praktikum wird größtenteils online durchgeführt. Wenn es die Teilnehmeranzahl und die Situation erlaubt, wird die Abschlussveranstaltung (Einsatz des Roboters auf selbsterstelltem Parcours) in Präsenz durchgeführt.

Literature

Verwendete Literatur wird im Praktikum bereitgestellt.

T

6.196 Course: Lab: Designing Embedded Application-Specific Processors [T-INFO-103115]**Responsible:** Prof. Dr.-Ing. Jörg Henkel**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-101631 - Lab: Designing Embedded Application-Specific Processors](#)**Type**
Examination of another type**Credits**
4**Recurrence**
Each winter term**Version**
1

Events					
SS 2020	2424302	Customized Embedded Processor Design	4 SWS	Practical course (P)	Hussain, Amrouch, Bauer, Henkel
WS 20/21	2424302	Customized Embedded Processor Design	4 SWS	Practical course (P) / 	Hussain, Bauer, Henkel
Exams					
SS 2020	7500203	Lab: Customized Embedded Prozessor Design		Prüfung (PR)	Henkel
WS 20/21	7500244	Lab: Designing embedded processors with an application-specific instruction set		Prüfung (PR)	Henkel

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

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

V

Customized Embedded Processor Design2424302, SS 2020, 4 SWS, Language: German/English, [Open in study portal](#)**Practical course (P)****Content**

Internet of Things (IoT) covers an ever-increasing range of applications. Smart sensors and embedded devices with networking capabilities connect to the Internet to provide advanced control and monitoring services in healthcare, smart home, smart city and many other domains.

The design of embedded processors, especially for IoT, has experienced significant progress since past few years. This development has been characterized by the increasing demand for application-specific solutions for IoT in order to fulfil the diverse and contradictory requirements of low power consumption, high performance, low cost and most importantly an efficient time-to-market deployment of those processors.

Application Specific Instruction Set Processors (ASIP) are customized processors, having a specific instruction set targeting a specific application to achieve an optimal solution for the above requirements. This customization can be addressed at different architectural levels by defining customized instructions, including/excluding predefined hardware blocks or setting processor's parameters.

The focus of this lab is to get hands-on expertise of state-of-the-art ASIP Tool-Suite and practice optimized processor design for IoT. We will select an IoT application from healthcare domain (e.g. heart rate monitoring), profile them, design ASIP targeting power/area/speed efficiency, and then use our infrastructure to benchmark the designed ASIP to compare cost & benefit in terms of performance, power, area, etc.

The ASIP design flow includes analysing and profiling the targeted application, defining an ASIP accordingly, creating the special instruction, embedding required hardware blocks or configuring different architectural parameters. The synthesizable hardware description and complete compiler tool chain are generated automatically, and then the customized processor is implemented on an FPGA platform. This processor can be benchmarked for performance, area, and power constraints using ModelSim and Xilinx tools.

For this lab, the lab script and all exercises are available in English language.

The student will be supervised to learn how to adapt and customize a processor. This is done using state-of-the-art tool chains that can generate the required hardware description of the processor based on the optimization and customization that the student wants to do such as targeting performance and/or power goals. In addition, synthesis and implementation of the generated processor will be also done at the end using an FPGA platform.

V

Customized Embedded Processor Design2424302, WS 20/21, 4 SWS, Language: German/English, [Open in study portal](#)**Practical course (P)**
Online

Content

Internet of Things (IoT) covers an ever-increasing range of applications. Smart sensors and embedded devices with networking capabilities connect to the Internet to provide advanced control and monitoring services in healthcare, smart home, smart city and many other domains.

The design of embedded processors, especially for IoT, has experienced significant progress since past few years. This development has been characterized by the increasing demand for application-specific solutions for IoT in order to fulfil the diverse and contradictory requirements of low power consumption, high performance, low cost and most importantly an efficient time-to-market deployment of those processors.

Application Specific Instruction Set Processors (ASIP) are customized processors, having a specific instruction set targeting a specific application to achieve an optimal solution for the above requirements. This customization can be addressed at different architectural levels by defining customized instructions, including/excluding predefined hardware blocks or setting processor's parameters.

The focus of this lab is to get hands-on expertise of state-of-the-art ASIP Tool-Suite and practice optimized processor design for IoT. We will select an IoT application from healthcare domain (e.g. heart rate monitoring), profile them, design ASIP targeting power/area/speed efficiency, and then use our infrastructure to benchmark the designed ASIP to compare cost & benefit in terms of performance, power, area, etc.

The ASIP design flow includes analysing and profiling the targeted application, defining an ASIP accordingly, creating the special instruction, embedding required hardware blocks or configuring different architectural parameters. The synthesizable hardware description and complete compiler tool chain are generated automatically, and then the customized processor is implemented on an FPGA platform. This processor can be benchmarked for performance, area, and power constraints using ModelSim and Xilinx tools.

For this lab, the lab script and all exercises are available in English language.

Organizational issues


Additionally please subscribe at <http://ces.itec.kit.edu/1033.php>



T

6.197 Course: Lab: Designing Embedded Systems [T-INFO-107689]

Responsible: Prof. Dr.-Ing. Jörg Henkel
Organisation: KIT Department of Informatics
Part of: [M-INFO-103808 - Lab: Designing Embedded Systems](#)

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

Events					
SS 2020	2424303	Design of embedded systems	4 SWS	Practical course (P)	Salamin, Bauer, Henkel
WS 20/21	2424303	Design of embedded systems	4 SWS	Practical course (P) / 	Salamin, Bauer, Henkel
Exams					
SS 2020	7500174	Lab: Designing embedded systems		Prüfung (PR)	Henkel
WS 20/21	7500160	Lab: Designing embedded systems		Prüfung (PR)	Henkel

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

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

V

Design of embedded systems

2424303, SS 2020, 4 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)

Content

Embedded Systems are systems that are composed of hardware and software parts that are developed for a special task within a bigger system.

Examples for such systems are smart phones, digital cameras, robot controls, set-top boxes etc. The application areas of such systems are growing rapidly. As these systems are not only composed of application software, this lab exercises the combined development of hardware and software, as it is typical for embedded systems. A Fischertechnik robot and a hardware development board are used as target system.

The schedule of the lab is as follows:

At first, the abstract behavior of the system is described. The task is to have the robot follow a small black line on a bright background by using photoresistors. This specification is transformed into a software for a microcontroller. The microcontroller is available as a hardware description. To connect it to periphery (motors and photoresistors), additional parts have to be written in a hardware-description language. This shows the usage of typical development- and design tools for simulation and synthesis. After combining the hardware and the software parts, the robot is tested against the initial specification.

Prerequisites: Base knowledge in VHDL and C/C++ programming.

Targetaudience: This lab is suitable for electrical engineering students, computer science students and those who have interest in embedded systems design.

V

Design of embedded systems

2424303, WS 20/21, 4 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)
Blended (On-Site/Online)

Content

Embedded Systems are systems that are composed of hardware and software parts that are developed for a special task within a bigger system.

Examples for such systems are smart phones, digital cameras, robot controls, set-top boxes etc. The application areas of such systems are growing rapidly. As these systems are not only composed of application software, this lab exercises the combined development of hardware and software, as it is typical for embedded systems. A Fischertechnik robot and a hardware development board are used as target system.

The schedule of the lab is as follows:

At first, the abstract behavior of the system is described. The task is to have the robot follow a small black line on a bright background by using photoresistors. This specification is transformed into a software for a microcontroller. The microcontroller is available as a hardware description language (HDL). To connect it to periphery (motors and photoresistors), additional parts have to be written in a hardware-description language. This shows the usage of typical development- and design tools for simulation and synthesis. After combining the hardware and the software parts, the robot is tested against the initial specification. Furthermore, an intelligent searching algorithm has to be implemented to find the line when it gets lost.

Prerequisites: Base knowledge in VHDL and C/C++ programming.


Target audience: This lab is suitable for electrical engineering students, computer science students and those who have interest in embedded systems design.





T

6.198 Course: Lab: Efficient parallel C++ [T-INFO-106992]

Responsible: Prof. Dr. Peter Sanders
Organisation: KIT Department of Informatics
Part of: [M-INFO-103506 - Lab: Efficient parallel C++](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Irregular	1

Events					
WS 20/21	2400015	Efficient parallel C++	4 SWS	Practical course (P) /	 Sanders, Witt, Maier, Lamm

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

T**6.199 Course: Lab: Graph Visualization in Practice [T-INFO-106580]**

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [M-INFO-103302 - Lab: Graph Visualization in Practice](#)

Type	Credits	Recurrence	Version
Examination of another type	5	Irregular	1


Events					
SS 2020	2400037	Graph Visualization in Practice	2 SWS	Practical course (P)	Wagner, Mtsentlintze, Radermacher

T

6.200 Course: Lab: Internet of Things (IoT) [T-INFO-107493]

Responsible: Prof. Dr.-Ing. Jörg Henkel
Organisation: KIT Department of Informatics
Part of: [M-INFO-103706 - Lab: Internet of Things \(IoT\)](#)

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

Events					
SS 2020	2424304	Internet of Things (IoT)	4 SWS	Practical course (P)	Salamin, Ghasemy, Henkel
WS 20/21	2424304	Internet of Things (IoT)	4 SWS	Practical course (P) / 	Salamin, Henkel
Exams					
SS 2020	7500187	Lab: Internet of Things (IoT)		Prüfung (PR)	Henkel
WS 20/21	7500183	Lab: Internet of Things (IoT)		Prüfung (PR)	Henkel

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

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

V

Internet of Things (IoT)

2424304, SS 2020, 4 SWS, Language: English, [Open in study portal](#)

Practical course (P)

Content

This lab aims at providing the student with the practical concept of IoT systems design.

It provides an overview of the IoT systems' aspects including embedded intelligence, connectivity, interaction with physical world, etc.

It covers the main design and implementation issues for IoT devices and their applications. These issues challenge the students to tailor smart techniques to optimize the embedded software on IoT device to meet the constrained resources.

The students gain in-depth practical experiences in embedded system design with focus on the IoT applications as well as the communication in connected devices.

-This lab is also suitable for electrical engineering students and those who have interest in embedded systems design.

-The ability to develop software programs in C or C++ is recommended.

-Basic knowledge about other programming languages can be helpful (e.g. Java or Python)

The students will understand the main concept of IoT systems including the design objectives, application domains and their requirements, design challenges, etc.

The students will gain the ability to develop software programs for the IoT embedded devices, implement the code on the hardware, conduct the tests, find the bugs and errors, and debug the software code on the hardware.

The students shall be able to implement and apply the concepts that are critical in IoT domain, e.g. low power design, security, etc.

The students will be able to develop, integrate and evaluate a small IoT system with its main components: sensors to get data from physical world, embedded processor for control the device and process the data, wireless radio to transmit the data from the device to the Internet, a storage (on the Internet or on a Smart Phone) to keep the data for further analysis.

V

Internet of Things (IoT)

2424304, WS 20/21, 4 SWS, Language: English, [Open in study portal](#)

Practical course (P)
Online

Content

- This lab aims at providing the student with the practical concept of IoT systems design.
- It provides an overview of the IoT systems' aspects including embedded intelligence, connectivity, interaction with physical world, etc.
- It covers the main design and implementation issues for IoT devices and their applications. These issues challenge the students to tailor smart techniques to optimize the embedded software on IoT device to meet the constrained resources.
- The students gain in-depth practical experiences in embedded system design with focus on the IoT applications as well as the communication in connected devices.
- This lab is also suitable for electrical engineering students and those who have interest in embedded systems design.
- The ability to develop software programs in C or C++ is recommended.
- Basic knowledge about other programming languages can be helpful (e.g. Java or Python)

The students will understand the main concept of IoT systems including the design objectives, application domains and their requirements, design challenges, etc.


The students will gain the ability to develop software programs for the IoT embedded devices, implement the code on the hardware, conduct the tests, find the bugs and errors, and debug the software code on the hardware.





The students shall be able to implement and apply the concepts that are critical in IoT domain, e.g. low power design, security, etc.

The students will be able to develop, integrate and evaluate a small IoT system with its main components: sensors to get data from physical world, embedded processor for control the device and process the data, wireless radio to transmit the data from the device to the Internet, a storage (on the Internet or on a Smart Phone) to keep the data for further analysis.

T

6.201 Course: Lab: Low Power Design and Embedded Systems [T-INFO-108323]**Responsible:** Prof. Dr.-Ing. Jörg Henkel**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-104031 - Lab: Low Power Design and Embedded Systems](#)**Type**
Examination of another type**Credits**
3**Recurrence**
Each term**Version**
1

Events					
SS 2020	2424811	Low Power Design and Embedded Systems	2 SWS	Practical course (P)	Castro-Godínez, Henkel
WS 20/21	2424120	Low Power Design and Embedded Systems	2 SWS	Practical course (P) / 	Castro-Godínez, Henkel
Exams					
SS 2020	7500158	Lab: Low Power Design and Embedded Systems		Prüfung (PR)	Henkel
WS 20/21	7500104	Lab: Low Power Design and Embedded Systems		Prüfung (PR)	Henkel

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

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

V

Low Power Design and Embedded Systems2424811, SS 2020, 2 SWS, Language: English, [Open in study portal](#)**Practical course (P)****Content**

This Lab is composed of two main experimentations. The first part consists of an exploration and analysis of the effect of loop transformation techniques and compiler optimizations in the power consumption, execution time and cache performance. SimpleScalar and Wattach simulators are used to run the applications and to obtain metrics to analyze.

Nowadays, power consumption is one of the most important criterion in the design of on-chip applications. Other design constraints, such as performance, were dominant in the past, but now it is imperative to optimize the power consumption, due it is a limiting factor. In fact, the power consumption has brought out many changes in the last decade: the fact that today we have multi-core chips instead of single core chips, is a direct result of the increase of power consumption. The power consumption is not only a matter of hardware, but also the software and the operating system decisively determine it. Therefore, this internship is indispensable for all who deal with on-chip systems at hardware and software level.

The second part of the lab consists of a Hardware/Software Co-design exploration using a High-Level Synthesis (HLS) Tool called "LegUp". This tool is capable to take a C code implementation and to produce three types of implementations: a complete hardware (RTL) implementation, a software implementation to be executed in a MIPS soft-processor, and a hybrid implementation where one or more functions of a program are compiled to hardware accelerators with the remaining program segments running in software in a MIPS soft-processor. Considering these possibilities, the participants of the Lab will perform an exploration and analysis of the implementations in terms of required execution cycles, maximum frequency, area (FPGA resources), and power consumption. Altera Quartus tools are used to synthesize the implementations and obtain metrics, while Modelsim tool is used to perform simulations.

V

Low Power Design and Embedded Systems2424120, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)**Practical course (P)**
Online

Content

Nowadays, power consumption is one of the most important criterion in the design of on-chip applications. Other design constraints, such as performance, were dominant in the past, but now it is imperative to optimize the power consumption, due it is a limiting factor. In fact, the power consumption has brought out many changes in the last decade: the fact that today we have multi-core chips instead of single core chips, is a direct result of the increase of power consumption. The power consumption is not only a matter of hardware, but also the software and the operating system decisively determine it. Therefore, this internship is indispensable for all who deal with on-chip systems at hardware and software level.

This Lab is composed of two main experimentations. The first part consists of an exploration and analysis of the effect of loop transformation techniques and compiler optimizations in the power consumption, execution time and cache performance. SimpleScalar and Wattch simulators are used to run the applications and to obtain metrics to analyze.

The second part of the lab consists of a Hardware/Software Co-design exploration using a High-Level Synthesis (HLS) Tool called "LegUp". This tool is capable to take a C code implementation and to produce three types of implementations: a complete hardware (RTL) implementation, a software implementation to be executed in a MIPS soft-processor, and a hybrid implementation where one or more functions of a program are compiled to hardware accelerators with the remaining program segments running in software in a MIPS soft-processor. Considering these possibilities, the participants of the Lab will perform an exploration and analysis of the implementations in terms of required execution cycles, maximum frequency, area (FPGA resources), and power consumption. Altera Quartus tools are used to synthesize the implementations and obtain metrics, while Modelsim tool is used to perform simulations.

Preliminary discussion appointment: it will be announced via email to all registrants.

Note: The lab is given as a full week block.

T

6.202 Course: Laboratory Course Algorithm Engineering [T-INFO-104374]

Responsible: Prof. Dr. Peter Sanders
Dr. rer. nat. Torsten Ueckerdt
Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics


Part of: [M-INFO-102072 - Laboratory Course Algorithm Engineering](#)





Type
Examination of another type

Credits
6

Recurrence
Irregular

Version
1

Events					
WS 20/21	24305	Practical Course in Algorithm Design	4 SWS	Practical course (P) / 	Buchhold, Zündorf, Zeitz, Ueckerdt, Sauer

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

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

V

Practical Course in Algorithm Design

24305, WS 20/21, 4 SWS, Language: German, [Open in study portal](#)

Practical course (P)
On-Site

Content

In the practical course *Algorithm Engineering* the students are given miscellaneous questions from algorithmics, which they have to implement independently in small working groups. The main focus lies on object oriented programming with Java or C++. Linear programming may also occur.

Prerequisites: Knowledge of the lecture Algorithms II is recommended.

Learning Goals:

The purpose of the practical course in algorithm design is to make learned knowledge work. The students are given varying topics from algorithmics, which they have to implement in small working groups. Possible Topics are, for example, algorithms for flow problems, shortest path problems, or clustering techniques. In this way students learn to write efficient code.

Workload: Praktikum mit 4SWS, 6 LP
6 LP entspricht ca. 180 Arbeitsstunden

T

6.203 Course: Laboratory in Cryptanalysis [T-INFO-102990]

Responsible: Prof. Dr. Dennis Hofheinz
Prof. Dr. Jörn Müller-Quade

Organisation: KIT Department of Informatics

Part of: [M-INFO-101559 - Laboratory in Cryptanalysis](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2020	24881	Laboratory: Cryptanalysis	4 SWS	Practical course (P)	Müller-Quade, Geiselman, Agrikola, Hanisch
Exams					
SS 2020	7500110	Laboratory in Cryptography		Prüfung (PR)	Geiselman, Müller- Quade
SS 2020	7500111	Laboratory in Cryptanalysis		Prüfung (PR)	Geiselman, Müller- Quade


T**6.204 Course: Laboratory in Cryptography [T-INFO-102989]**





Responsible: Prof. Dr. Dennis Hofheinz
Prof. Dr. Jörn Müller-Quade

Organisation: KIT Department of Informatics

Part of: [M-INFO-101558 - Laboratory in Cryptography](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each winter term	1

Events				
WS 20/21	24301	Laboratory Cryptography and Security	4 SWS	Practical course (P) /  Müller-Quade, Geiselmann, Agrikola
Exams				
SS 2020	7500110	Laboratory in Cryptography	Prüfung (PR)	Geiselmann, Müller-Quade

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

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

V**Laboratory Cryptography and Security**

24301, WS 20/21, 4 SWS, [Open in study portal](#)

Practical course (P)
Online

Content

The lab covers different areas of computer security and cryptography. The topics are presented theoretically and are implemented afterwards. Covered topics are:

- Historical encryption
- EC-card PINs
- Block ciphers
- Efficient long number arithmetic
- ElGamal encryption / signature

T


6.205 Course: Laboratory in Security [T-INFO-102991]


Responsible: Prof. Dr. Dennis Hofheinz
Prof. Dr. Jörn Müller-Quade

Organisation: KIT Department of Informatics

Part of: [M-INFO-101560 - Laboratory in Security](#)

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

Events					
WS 20/21	2512557	Practical Course Security (Master)	4 SWS	Practical course (P) /	 Baumgart, Volkamer, Mayer

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

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

V

Practical Course Security (Master)

2512557, WS 20/21, 4 SWS, Language: German, [Open in study portal](#)

Practical course (P)
Online

Content

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

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

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

T**6.206 Course: Large-scale Optimization [T-WIWI-106549]**

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)
[M-WIWI-102832 - Operations Research in Supply Chain Management](#)
[M-WIWI-103289 - Stochastic Optimization](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

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

6.207 Course: Law of Contracts [T-INFO-101316]

Responsible: Dr. Alexander Hoff
Organisation: KIT Department of Informatics
Part of: [M-INFO-101216 - Private Business Law](#)
[M-INFO-101242 - Governance, Risk & Compliance](#)


Type	Credits	Recurrence	Version
Written examination	3	Each term	1





Events					
SS 2020	24671	Law of Contracts	2 SWS	Lecture (V)	Hoff
Exams					
SS 2020	7500055	Law of Contracts		Prüfung (PR)	Dreier, Matz

T**6.208 Course: Liberalised Power Markets [T-WIWI-107043]**

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101451 - Energy Economics and Energy Markets](#)
[M-WIWI-102808 - Digital Service Systems in Industry](#)

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	1

Events					
WS 20/21	2581998	Liberalised Power Markets	2 SWS	Lecture (V) / 	Fichtner
Exams					
SS 2020	7900253	Liberalised Power Markets		Prüfung (PR)	Fichtner

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.

Prerequisites

None

Recommendation

None

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

V**Liberalised Power Markets**

2581998, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content**1. Power markets in the past, now and in future****2. Designing liberalised power markets**

- 2.1. Unbundling Dimensions of liberalised power markets
- 2.2. Central dispatch versus markets without central dispatch
- 2.3. The short-term market model
- 2.4. The long-term market model
- 2.5. Market flaws and market failure
- 2.6. Regulation in liberalised markets

3. The power (sub)markets

- 3.1 Day-ahead market
- 3.2 Intraday market
- 3.3 (Long-term) Forwards and futures markets
- 3.4 Emission rights market
- 3.5 Market for ancillary services
- 3.6 The “market” for renewable energies
- 3.7 Future market segments

4. Grid operation and congestion management

- 4.1. Grid operation
- 4.2. Congestion management

5. Market power

- 5.1. Defining market power
- 5.2. Indicators of market power
- 5.3. Reducing market power

6. Future market structures in the electricity value chain**1. Power markets in the past, now and in future****2. Designing liberalised power markets**

- 2.2. Unbundling Dimensions of liberalised power markets
- 2.3. Central dispatch versus markets without central dispatch
- 2.4. The short-term market model
- 2.5. The long-term market model
- 2.6. Market flaws and market failure
- 2.7. Regulation in liberalised markets

3. The power (sub)markets

- 3.1 Day-ahead market
- 3.2 Intraday market
- 3.3 (Long-term) Forwards and futures markets
- 3.4 Emission rights market
- 3.5 Market for ancillary services
- 3.6 The “market” for renewable energies
- 3.7 Future market segments

4. Grid operation and congestion management

- 4.1. Grid operation
- 4.2. Congestion management

5. Market power

- 5.1. Defining market power
- 5.2. Indicators of market power
- 5.3. Reducing market power

6. Future market structures in the electricity value chain

Literature

Weiterführende Literatur:

Power System Economics; Steven Stoft, IEEE Press/Wiley-Interscience Press, 0-471-15040-1

T

6.209 Course: Life Cycle Assessment [T-WIWI-110512]


Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101412 - Industrial Production III](#)
[M-WIWI-101471 - Industrial Production II](#)





Type
Written examination

Credits
3,5

Recurrence
Each winter term

Version
1

Events					
WS 20/21	2581995	Life Cycle Assessment	2 SWS	Lecture (V) / 	Maier
Exams					
SS 2020	7981995	Life Cycle Assessment		Prüfung (PR)	Schultmann

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

Competence Certificate

The examination takes place in the form of a written examination (according to §4(2), 1 SPO). The examination is offered every semester and can be repeated at any regular examination date.

Prerequisites

None.

Recommendation

None

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

V

Life Cycle Assessment

2581995, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

Introduction to life cycle assessment. The lecture describes structure and individual steps of life cycle assessment in detail.

Literature

werden in der Veranstaltung bekannt gegeben

T

6.210 Course: Localization of Mobile Agents [T-INFO-101377]

Responsible: Prof. Dr.-Ing. Uwe Hanebeck
Organisation: KIT Department of Informatics
Part of: [M-INFO-100840 - Localization of Mobile Agents](#)

Type	Credits	Recurrence	Version
Oral examination	6	Each summer term	1

Events					
SS 2020	24613	Localization of Mobile Agents	3 SWS	Lecture (V)	Noack, Li
Exams					
SS 2020	7500004	Localization of Mobile Agents		Prüfung (PR)	Hanebeck, Noack
WS 20/21	7500020	Localization of Mobile Agents		Prüfung (PR)	Noack, Hanebeck

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

V

Localization of Mobile Agents

24613, SS 2020, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

This module provides a systematic introduction into the topic of localization methods. In order to facilitate understanding, the module is divided into four main topics. Dead reckoning treats the instantaneous determination of a vehicle's position based on dynamic parameters like velocity or steering angle. Localization with the help of measurements of known landmarks is part of static localization. In addition to the closed-form solutions for particular measurements (distances and angles), the least squares method for fusion arbitrary measurements is also introduced. Dynamic localization treats the combination of dead reckoning and static localization. The central part of the lecture is the derivation of the Kalman filter, which has been successfully applied in several practical applications. Finally, simultaneous localization and mapping (SLAM) is introduced, which allows localization in case of (partly) unknown landmark positions.

Organizational issues

Prüfungsterminvorschläge und das Verfahren dazu sind auf der Webseite der Vorlesung zu finden.

Literature

Grundlegende Kenntnisse der linearen Algebra und Stochastik sind hilfreich.

T

6.211 Course: Low Power Design [T-INFO-101344]

Responsible: Prof. Dr.-Ing. Jörg Henkel
Organisation: KIT Department of Informatics
Part of: [M-INFO-100807 - Low Power Design](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	1

Events					
SS 2020	2424672	Low Power Design	2 SWS	Lecture (V)	Henkel, Amrouch
Exams					
SS 2020	7500200	VL: Low Power Design		Prüfung (PR)	Henkel
WS 20/21	7500139	VL: Low Power Design		Prüfung (PR)	Henkel

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

V

Low Power Design

2424672, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

Smart embedded devices driven by advances in fields as diverse as automotive smart home, to high-tech like lithography or battery technology for IoT devices are now omnipresent in our lives. Today's consumers have very high expectations from the embedded devices they own. Many emerging technologies such as virtual reality, robotics and artificial intelligence are limited in scope only by the performance of the underlying embedded devices. Unfortunately, performance of embedded devices is inherently constrained both by their limited cost, size as well as heat dissipating capacity and their limited on-board battery. The fact that all contemporary smartphones have multi-core chips running at low frequencies instead of single-core chips running at high frequencies can be attributed directly to the power consumption constraints imposed on them.

The constraints mandate highly optimized hardware-software co-design techniques for embedded devices that allows extraction of maximum performance with minimal power consumption. A good low power design requires all three building blocks of an embedded device – hardware, software and operating system – to work together synergistically. The lectures cover all the three aspects alongside their interactions from a low power design perspective in depth.

The lecture provides an overview of design methods, synthesis tools, estimation models, software techniques, operating system strategies, scheduling algorithms, etc., with the aim of minimizing the power consumption of embedded devices without compromising their performance. Both the research-relevant and industry-prevalent topics at different level of abstractions (from circuit to system) are discussed in this lecture.

Recommendations: Module "Entwurf und Architekturen für eingebettete Systeme". Basic knowledge from the module "Optimierung und Synthese Eingebetteter Systeme" is helpful but not essential for understanding of this lecture. The lecture is equally suitable for students from both computer science as well as electrical engineering department.


Students are made aware of various low power design optimizations employed in state-of-the-art embedded devices. At the end of the lecture, the students will be able to recognize the challenges involved in crafting efficient low power designs and how to tackle them.




T

6.212 Course: Machine Learning - Basic Methods [T-INFO-110630]

Responsible: Prof. Dr. Gerhard Neumann
Organisation: KIT Department of Informatics
Part of: [M-INFO-105252 - Machine Learning - Basic Methods](#)

Type	Credits	Recurrence	Version
Written examination	5	Each winter term	2

Events					
WS 20/21	2400129	Machine Learning - Basic Methods	SWS: 3 / ECTS: 5 SWS	Lecture / Practice (VÜ) / 	Neumann
Exams					
SS 2020	7500306	Machine Learning - Basic Methods		Prüfung (PR)	Neumann

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

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

V

Machine Learning - Basic Methods

2400129, WS 20/21, SWS: 3 / ECTS: 5 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

Content

Qualifikationsziele:

- Studierende Erlangen Kenntnis der grundlegenden Methoden des Maschinellen Lernens
- Studierende erlangen die mathematischen Grundkenntnisse um die theoretischen Grundlagen des Maschinellen Lernens verstehen zu können
- Studierende können Methoden des Maschinellen Lernens einordnen, formal beschreiben und bewerten
- Studierende können ihr Wissen für eine Auswahl geeigneter Modelle und Methoden für ausgewählte Probleme im Bereich des Maschinellen Lernens einsetzen

Organizational issues

Prof. Gerhard Neumann



M.Sc. Onur Celik





T

6.213 Course: Machine Learning 1 - Basic Methods [T-WIWI-106340]

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103356 - Machine Learning](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	3

Events					
WS 20/21	2511500	Machine Learning 1 - Fundamental Methods	2 SWS	Lecture (V) / 	Zöllner
WS 20/21	2511501	Exercises to Machine Learning 1 - Fundamental Methods	1 SWS	Practice (Ü) / 	Zöllner
Exams					
SS 2020	7900154	Machine Learning 1 - Basic Methods (Registration until 13 July 2020)		Prüfung (PR)	Zöllner

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 (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.

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

V

Machine Learning 1 - Fundamental Methods

2511500, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)
Online**

Content

The field of knowledge acquisition and machine learning is a rapidly expanding field of knowledge and the subject of numerous research and development projects. The acquisition of knowledge can take place in different ways. Thus a system can benefit from experiences already made, it can be trained, or it draws conclusions from extensive background knowledge.

The lecture covers symbolic learning methods such as inductive learning (learning from examples, learning by observation), deductive learning (explanation-based learning) and learning from analogies, as well as sub-symbolic techniques such as neural networks, support vector machines and genetic algorithms. The lecture introduces the basic principles and structures of learning systems and examines the algorithms developed so far. The structure and operation of learning systems is presented and explained with some examples, especially from the fields of robotics and image processing.

Learning objectives:

- Students acquire knowledge of the fundamental methods in the field of machine learning.
- Students can classify, formally describe and evaluate methods of machine learning.
- Students can use their knowledge to select suitable models and methods for selected problems in the field of machine learning.

Literature

Die Foliensätze sind als PDF verfügbar

Weiterführende Literatur

- Artificial Intelligence: A Modern Approach - Peter Norvig and Stuart J. Russell
- Machine Learning - Tom Mitchell
- Pattern Recognition and Machine Learning - Christopher M. Bishop
- Reinforcement Learning: An Introduction - Richard S. Sutton and Andrew G. Barto
- Deep Learning - Ian Goodfellow, Yoshua Bengio, Aaron Courville

Weitere (spezifische) Literatur zu einzelnen Themen wird in der Vorlesung angegeben.

T

6.214 Course: Machine Learning 2 – Advanced Methods [T-WIWI-106341]

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101637 - Analytics and Statistics](#)
[M-WIWI-103356 - Machine Learning](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Events					
SS 2020	2511502	Machine Learning 2 - Advanced methods	2 SWS	Lecture (V)	Zöllner
SS 2020	2511503	Exercises for Machine Learning 2 - Advanced Methods	1 SWS	Practice (Ü)	Zöllner
Exams					
SS 2020	7900080	Machine Learning 2 – Advanced Methods (Registration until 13 July 2020)		Prüfung (PR)	Zöllner

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 (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.

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

V

Machine Learning 2 - Advanced methods

2511502, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The subject area of machine intelligence and, in particular, machine learning, taking into account real challenges of complex application domains, is a rapidly expanding field of knowledge and the subject of numerous research and development projects.

The lecture "Machine Learning 2" deals with advanced methods of machine learning such as semi-supervised and active learning, deep neural networks (deep learning), pulsed networks, hierarchical approaches, e.g. As well as dynamic, probabilistic relational methods. Another focus is the embedding and application of machine learning methods in real systems.

The lecture introduces the latest basic principles as well as extended basic structures and elucidates previously developed algorithms. The structure and the mode of operation of the methods and methods are presented and explained by means of some application scenarios, especially in the field of technical (sub) autonomous systems (robotics, neurorobotics, image processing, etc.).

Learning objectives:

- Students understand extended concepts of machine learning and their possible applications.
- Students can classify, formally describe and evaluate methods of machine learning.
- In detail, methods of machine learning can be embedded and applied in complex decision and inference systems.
- Students can use their knowledge to select suitable models and methods of machine learning for existing problems in the field of machine intelligence.

Recommendations:

Attending the lecture **Machine Learning 1** or a comparable lecture is very helpful in understanding this lecture.

Literature

Die Foliensätze sind als PDF verfügbar

Weiterführende Literatur

- Artificial Intelligence: A Modern Approach - Peter Norvig and Stuart J. Russell
- Machine Learning - Tom Mitchell
- Pattern Recognition and Machine Learning - Christopher M. Bishop
- Reinforcement Learning: An Introduction - Richard S. Sutton and Andrew G. Barto
- Deep Learning - Ian Goodfellow, Yoshua Bengio, Aaron Courville

Weitere (spezifische) Literatur zu einzelnen Themen wird in der Vorlesung angegeben.

T

6.215 Course: Machine Translation [T-INFO-101385]

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: [M-INFO-100848 - Machine Translation](#)

Type	Credits	Recurrence	Version
Oral examination	6	Each summer term	1

Events					
SS 2020	24639	Maschinelle Übersetzung	4 SWS	Lecture (V)	Waibel, Herrmann
Exams					
SS 2020	7500043	Machine Translation		Prüfung (PR)	Waibel
WS 20/21	7500186	Machine Translation		Prüfung (PR)	Stüker, Waibel

T

6.216 Course: Management Accounting 1 [T-WIWI-102800]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101498 - Management Accounting](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Events					
SS 2020	2579900	Management Accounting 1	2 SWS	Lecture (V)	Wouters
SS 2020	2579901	Übung zu Management Accounting 1 (Bachelor)	2 SWS	Practice (Ü)	Riar
SS 2020	2579902		2 SWS	Practice (Ü)	Riar
Exams					
SS 2020	79-2579900-B	Management Accounting 1 (Bachelor)		Prüfung (PR)	Wouters
SS 2020	79-2579900-M	Management Accounting 1 (Mastervorzug und Master)		Prüfung (PR)	Wouters

Competence Certificate

The assessment consists of a written exam (120 minutes) (following §4(2), 1 of the examination regulation) at the end of each semester.

Prerequisites

None

Annotation

Students in the Bachelor' program can only take the related tutorial and examination. Students in the Master's program (and Bachelor's students who are already completing examinations for their Master's program) can only take the related tutorial and examination.

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

V

Management Accounting 1

2579900, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

The course covers topics in management accounting in a decision-making framework. Some of these topics in the course MA1 are: short-term planning, investment decisions, budgeting and activity-based costing.

We will use international material written in English.

We will approach these topics primarily from the perspective of the users of financial information (not so much from the controller who prepares the information).

The course builds on an introductory level of understanding of accounting concepts from Business Administration courses in the core program. The course is intended for students in Industrial Engineering.

Learning objectives:

- Students have an understanding of theory and applications of management accounting topics.
- They can use financial information for various purposes in organizations.

Examination:

- The assessment consists of a written exam (120 minutes) at the end of each semester (following § 4 (2) No. 1 of the examination regulation).

Workload:

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

Literature

- Marc Wouters, Frank H. Selto, Ronald W. Hilton, Michael W. Maher: Cost Management – Strategies for Business Decisions, 2012, Publisher: McGraw-Hill Higher Education (ISBN-13 9780077132392 / ISBN-10 0077132394)
- In addition, several papers that will be available on ILIAS.

**Übung zu Management Accounting 1 (Bachelor)**

2579901, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Practice (Ü)**Content**

see Module Handbook



2579902, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Practice (Ü)**Content**

see Module Handbook

T

6.217 Course: Management Accounting 2 [T-WIWI-102801]




Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101498 - Management Accounting](#)





Type
Written examination

Credits
4,5

Recurrence
Each winter term

Version
2

Events					
WS 20/21	2579903	Management Accounting 2	2 SWS	Lecture (V) / 	Wouters
WS 20/21	2579904		2 SWS	Practice (Ü) / 	Ebinger
WS 20/21	2579905		2 SWS	Practice (Ü) / 	Ebinger
Exams					
SS 2020	79-2579903-B	Management Accounting 2 (Bachelor)	Prüfung (PR)		Wouters
SS 2020	79-2579903-M	Management Accounting 2 (Mastervorzug und Master)	Prüfung (PR)		Wouters

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

Competence Certificate

The assessment consists of a written exam (120 minutes) at the end of each semester.

Prerequisites

None

Recommendation

It is recommended to take part in the course "Management Accounting 1" before this course.

Annotation

Students in the Bachelor' program can only take the related tutorial and examination. Students in the Master's program (and Bachelor's students who are already completing examinations for their Master's program) can only take the related tutorial and examination.

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

V

Management Accounting 2

2579903, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

The course covers topics in management accounting in a decision-making framework. Some of these topics in the course MA2 are: cost estimation, product costing and cost allocation, financial performance measures, transfer pricing, strategic performance measurement systems.

We will use international material written in English.

We will approach these topics primarily from the perspective of the users of financial information (not so much from the controller who prepares the information).

The course builds on an introductory level of understanding of accounting concepts from Business Administration courses in the core program. The course is intended for students in Industrial Engineering.

Learning objectives:

- Students have an understanding of theory and applications of management accounting topics. They can use financial information for various purposes in organizations.

Recommendations:

- It is recommended to take part in the course "Management Accounting 1" before this course.

Examination:

- The assessment consists of a written exam (120 min) at the end of each semester (following § 4 (2) No. 1 of the examination regulation).

Workload:

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

Literature

- Marc Wouters, Frank H. Selto, Ronald W. Hilton, Michael W. Maher: Cost Management – Strategies for Business Decisions, 2012, Verlag: McGraw-Hill Higher Education (ISBN-13 9780077132392 / ISBN-10 0077132394)
- Zusätzlich werden Artikel auf ILIAS zur Vergütung gestellt.



2579904, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

**Practice (Ü)
Online**

Content

see ILIAS



2579905, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

**Practice (Ü)
Online**

Content

see ILIAS

T

6.218 Course: Management of IT-Projects [T-WIWI-102667]

Responsible: Dr. Roland Schätzle
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101477 - Development of Business Information Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	3

Events					
SS 2020	2511214	Management of IT-Projects	2 SWS	Lecture (V)	Schätzle
SS 2020	2511215	Übungen zu Management von Informatik-Projekten	1 SWS	Practice (Ü)	Schätzle
Exams					
SS 2020	7900045	Management of IT-Projects (Registration until 13 July 2020)	Prüfung (PR)		Oberweis

Competence Certificate

The assessment takes place in the form of a written examination (exam) in the amount of 60 minutes. The examination is offered every semester and can be repeated at any regular examination date.

Prerequisite for the participation in the examination is the successful participation in the exercise, which takes place in the summer semester, starting from summer semester 2020. The number of participants in the exercise is limited.

The exact details will be announced in the lecture.

Prerequisites

Prerequisite for the participation in the examination is the successful participation in the exercise, which takes place in the summer semester, starting from summer semester 2020. The number of participants in the exercise is limited.

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

V

Management of IT-Projects

2511214, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The lecture deals with the general framework, impact factors and methods for planning, handling, and controlling of IT projects. Especially following topics are addressed:

- project environment
- project organisation
- project planning including the following items:
 - plan of the project structure
 - flow chart
 - project schedule
 - plan of resources
- effort estimation
- project infrastructure
- project controlling
- risk management
- feasibility studies
- decision processes, conduct of negotiations, time management.

Learning objectives:

Students

- explain the terminology of IT project management and typical used methods for planning, handling and controlling,
- apply methods appropriate to current project phases and project contexts,
- consider organisational and social impact factors.

Recommendations:

Knowledge from the lecture Software Engineering is helpful.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

Literature

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

**Übungen zu Management von Informatik-Projekten**

2511215, SS 2020, 1 SWS, Language: German, [Open in study portal](#)

Practice (Ü)

Content

The general conditions, influencing factors and methods in the planning, execution and control of IT projects are dealt with. In particular, the following topics will be dealt with: Project environment, project organization, project structure plan, effort estimation, project infrastructure, project control, decision-making processes, negotiation, time management. The lecture is accompanied by exercises in the form of tutorials. The date of the exercise will be announced later.

T

6.219 Course: Managing New Technologies [T-WIWI-102612]

Responsible: Dr. Thomas Reiß
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	2

Events					
SS 2020	2545003	Managing New Technologies	2 SWS	Lecture (V)	Reiß
Exams					
SS 2020	7900257	Managing New Technologies		Prüfung (PR)	Terzidis

Competence Certificate

Written exam 100% following §4, Abs. 2.

Prerequisites

None

Recommendation

None

Annotation

The credit points for T-WIWI-102612 "Management of New Technologies" were reduced to 3 credit points in the 2019 summer semester.

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

V

Managing New Technologies

2545003, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature

- Hausschildt/Salomo: Innovationsmanagement; Borchert et al.: Innovations- und Technologiemanagement;
- Specht/Möhrle; Gabler Lexikon Technologiemanagement

Die relevanten Auszüge und zusätzlichen Quellen werden in der Veranstaltung bekannt gegeben.

T

6.220 Course: Market Engineering: Information in Institutions [T-WIWI-102640]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101409 - Electronic Markets](#)
[M-WIWI-101446 - Market Engineering](#)
[M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-102754 - Service Economics and Management](#)
[M-WIWI-104813 - Information Systems: Internet-based Markets and Services](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2540460	Market Engineering: Information in Institutions	2 SWS	Lecture (V)	Straub
SS 2020	2540461	Übungen zu Market Engineering: Information in Institutions	1 SWS	Practice (Ü)	Golla
Exams					
SS 2020	7979235	Market Engineering: Information in Institutions		Prüfung (PR)	Weinhardt

Competence Certificate

The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations). By successful completion of the exercises (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015) up to 6 bonus points can be obtained. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by max. one grade level (0.3 or 0.4).

Prerequisites

None

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

V

Market Engineering: Information in Institutions

2540460, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Literature

- Roth, A., 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., Topics in Microeconomics - Industrial Organization, Auctions, and Incentives. Cambridge, Cambridge University Press, 1999.
- Smith, V. "Theory, Experiments and Economics", *The Journal of Economic Perspectives*, Vol. 3, No. 1, 151-69 1989

T

6.221 Course: Market Research [T-WIWI-107720]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101510 - Cross-Functional Management Accounting](#)
[M-WIWI-101647 - Data Science: Evidence-based Marketing](#)
[M-WIWI-105312 - Marketing and Sales Management](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2571150	Market Research	2 SWS	Lecture (V)	Klarmann
SS 2020	2571151	Market Research Tutorial	1 SWS	Practice (Ü)	Honold
Exams					
SS 2020	7900015	Market Research		Prüfung (PR)	Klarmann
SS 2020	7900203	Market Research		Prüfung (PR)	Klarmann

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Recommendation

None

Annotation

Please note that this course has to be completed successfully by students interested in master thesis positions at the Marketing & Sales Research Group.

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

V

Market Research

2571150, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

Within the lecture, essential statistical methods for measuring customer attitudes (e.g. satisfaction measurement), understanding customer behavior and making strategic decisions will be discussed. The practical use as well as the correct handling of different survey methods will be taught, such as experiments and surveys. To analyze the collected data, various analysis methods are presented, including hypothesis tests, factor analyses, cluster analyses, variance and regression analyses. Building on this, the interpretation of the results will be discussed.

Topics addressed in this course are for example:

- Theoretical foundations of market research
- Statistical foundations of market research
- Measuring customer attitudes
- Understanding customer reactions
- Strategical decision making

The aim of this lecture is to give an overview of essential statistical methods. In the lecture students learn the practical use as well as the correct handling of different statistical survey methods and analysis procedures. In addition, emphasis is put on the interpretation of the results after the application of an empirical survey. The derivation of strategic options is an important competence that is required in many companies in order to react optimally to customer needs.

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

The total workload for this course is approximately 135.0 hours.

Presence time: 30 hours

Preparation and wrap-up of the course: 45.0 hours

Exam and exam preparation: 60.0 hours

Please note that this course has to be completed successfully by students interested in master thesis positions at the chair of marketing.



Literature




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

T

6.222 Course: Marketing Analytics [T-WIWI-103139]**Responsible:** Prof. Dr. Martin Klarmann**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-101647 - Data Science: Evidence-based Marketing](#)

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

Events					
WS 20/21	2572170	Marketing Analytics	2 SWS	Lecture (V) / 	Klarmann
WS 20/21	2572171	Marketing Analytics Tutorial	1 SWS	Practice (Ü) / 	Klarmann

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

Competence Certificate

Alternative exam assessment (Working on tasks in groups during the lecture).

Prerequisites

The prerequisite for taking the course is the successful completion of the course "Market Research".

Recommendation

It is strongly recommended to complete the course "Market Research" prior to taking the "Marketing Analytics" course.

Annotation

"Marketing Analytics" will be offered as a block course in the winter term 20/21 with an alternative exam assessment.

For further information please contact the Marketing and Sales Research Group (marketing.iism.kit.edu). Exchange students can bypass the requirement of passing Market Research if they can prove that they possess sufficient statistical knowledge based on courses attended at their home institution. This will be examined individually by the Marketing & Sales Research Group.

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

V

Marketing Analytics

2572170, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

In this course various relevant market research questions are addressed, as for example measuring and understanding customer attitudes, preparing strategic decisions and sales forecasting. In order to analyze these questions, students learn to handle social media data, panel data, nested observations and experimental design. To analyze the data, advanced methods, as for example multilevel modeling, structural equation modeling and return on marketing models are taught. Also, problems of causality are addressed in-depth. The lecture is accompanied by a computer-based exercise, in the course of which the methods are applied practically.

Students

- receive based on the course market research an overview of advanced empirical methods
- learn in the course of the lecture to handle advanced data collection and data analysis methods
- are based on the acquired knowledge able to interpret results and derive strategic implications

Total workload for 4.5 ECTS: ca. 135 hours.

In order to attend Marketing Analytics, students are required to have passed the course Market Research.

Exchange students can bypass the requirement of passing Market Research if they can prove that they possess sufficient statistical knowledge based on courses attended at their home institution. This will be examined individually by the Marketing & Sales Research Group.

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

Organizational issues

Blockveranstaltung

Literature

- Hanssens, Dominique M., Parsons, Leonard J., Schultz, Randall L. (2003), Market response models: Econometric and time series analysis, 2nd ed, Boston.
- Gelman, Andrew, Hill, Jennifer (2006), Data analysis using regression and multilevel/hierarchical models, New York.
- Cameron, A. Colin, Trivedi, Pravin K. (2005), Microeconometrics: methods and applications, New York.
- Chapman, Christopher, Feit, Elea M. (2015), R for Marketing Research and Analytics, Cham.
- Ledolter, Johannes (2013), Data mining and business analytics with R, New York.

T

6.223 Course: Marketing Strategy Business Game [T-WIWI-102835]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101510 - Cross-Functional Management Accounting](#)
[M-WIWI-105312 - Marketing and Sales Management](#)

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

Events					
SS 2020	2571183	Marketing Strategy Business Game	1 SWS	Block (B)	Klarmann, Mitarbeiter
SS 2020	2571184	Real World Lab: Innovation Communication	1 SWS	Block (B)	Klarmann, Feurer, Honold
Exams					
SS 2020	7900022	Marketing Strategy Business Game		Prüfung (PR)	Klarmann

Competence Certificate

The assessment (alternative exam assessment) consists of a group presentation and a subsequent round of questions totalling 20 minutes.

Prerequisites

None

Recommendation

None

Annotation

Please note that only one of the courses from the election block can be chosen in the module.

Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1.5 ECTS points in the respective module to all students. Participation in a specific course cannot be guaranteed.

In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in summer term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the lecture period in summer term starts.

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

V

Marketing Strategy Business Game

2571183, SS 2020, 1 SWS, Language: German, [Open in study portal](#)

Block (B)

Content

Using Markstrat, a marketing strategy business game, students work in groups representing a company that competes on a simulated market against the other groups' companies.

Students

- are able to operate the strategic marketing simulation software "Markstrat"
- are able to take strategic marketing decisions in groups
- know how to apply strategic marketing concepts to practical contexts (e.g. for market segmentation, product launches, coordination of the marketing mix, market research, choice of the distribution channel or competitive behavior)
- are capable to collect and to select information usefully with the aim of decision-making
- are able to react appropriately to predetermined market conditions
- know how to present their strategies in a clear and consistent way
- are able to talk about the success, problems, critical incidents, external influences and strategy changes during the experimental game and to reflect and present their learning success

Non exam assessment (following §4(2), 3 of the examination regulation).

The total workload for this course is approximately 45.0 hours. For further information see German version.

- Please note that only one of the courses from the election block can be chosen in the module.
- Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1.5 ECTS in the respective module to all students. Participation in a specific course cannot be guaranteed.
- In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in summer term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the lecture period in summer term starts.

Organizational issues

Termine werden bekannt gegeben

Literature

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

**Real World Lab: Innovation Communication**

2571184, SS 2020, 1 SWS, Language: German/English, [Open in study portal](#)

Block (B)

Content

In this interactive course, students work in groups to develop and test a suitable communication measure to accompany the market launch of an innovative product by a start-up from Karlsruhe. For this purpose, the course is divided into four phases. (1) First, students work in groups to develop different scientific fundamentals (e.g. company goals, product/market characteristics, target groups, communication of innovations) and share these findings with other groups in the form of a team presentation. (2) Then each group independently develops its own online communication measure, which can be realized with a given budget and makes use of the knowledge gained from (1). (3) The groups implement this measure in the field, evaluate its effectiveness according to given criteria (KPIs) and adapt it if necessary. (4) Finally, the design and success of the measure are critically reflected and discussed and shared with the other groups in the form of a final presentation.

Information about the start-up: It is a medical device for the treatment of insect bites (+ corresponding app) with the smartphone. Launch of the product is spring 2020. Further information at heatit.de

Learning objectives

Students

- have the ability to make strategic marketing decisions independently in groups
- can apply basic marketing strategy concepts (e.g. market segmentation, product launch, coordination of the marketing mix, market research, channel selection or competitive behaviour) to a practical context
- can collect, analyze and meaningfully prepare information and KPIs for decision-making
- can react to given market conditions in a coordinated manner
- are able to present their strategy in a clear and coherent manner
- are able to talk about success, problems, important events, external influences and strategy changes during the practical test and present their learning effects in a reflected manner

Total effort

with 1.5 credit points: approx. 45 hours

Presence time

9 hours (3 compulsory dates: kick-off, 1st presentation, final presentation)

Preparation and follow-up of the course: 28.5 hours

Exam and exam preparation: 7.5 hours

Examination

The control of success is carried out in the form of an examination performance of another kind according to § 4 paragraph 2 no. 3 SPO (two team presentations)

Notes

An application is required for participation in this course. The application phase usually takes place at the beginning of the lecture period in the summer semester. This course is restricted. The research group Marketing and Sales typically allows all students to attend a course at 1.5 credit points in the corresponding module. A guarantee for the attendance of a specific course can not be given, though. Further information can be obtained directly from the research group Marketing and Sales [marketing.iism.kit.edu]. Please note that only one of the 1.5-ECTS events can be credited for the module.

Organizational issues

einmalige Veranstaltung im Sommer 2020

Termine werden bekannt gegeben

T

6.224 Course: Master Thesis [T-WIWI-103142]

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

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-104833 - Module Master Thesis](#)

Type	Credits	Version
Final Thesis	30	1

Competence Certificate
see module description


Prerequisites
see module description

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

Submission deadline	6 months
Maximum extension period	3 months
Correction period	8 weeks

T**6.225 Course: Mechanisms and Applications of Workflow Systems [T-INFO-101257]****Responsible:** Jutta Mülle**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100720 - Mechanisms and Applications of Workflow Systems](#)

Type	Credits	Recurrence	Version
Written examination	5	Each winter term	1

Events					
WS 20/21	24111	Konzepte und Anwendungen von Workflowsystemen	3 SWS	Lecture (V) / 	Mülle
Exams					
SS 2020	7500094	Mechanisms and Applications of Workflow Systems	Prüfung (PR)		Mülle

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

T

6.226 Course: Medical Robotics [T-INFO-101357]

Responsible: Prof. Dr.-Ing. Torsten Kröger
Jun.-Prof. Dr. Franziska Mathis-Ullrich

Organisation: KIT Department of Informatics

Part of: [M-INFO-100820 - Medical Robotics](#)

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	1

Events					
SS 2020	24681	Medical Robotics	2 SWS	Lecture (V)	Mathis-Ullrich
Exams					
SS 2020	7500244	Medical Robotics		Prüfung (PR)	Mathis-Ullrich

T**6.227 Course: Meshes and Point Clouds [T-INFO-101349]**

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-100812 - Meshes and Point Clouds](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each term	1



6.228 Course: Methods in Economic Dynamics [T-WIWI-102906]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101514 - Innovation Economics](#)

Type	Credits	Recurrence	Version
Examination of another type	1,5	Each summer term	2

Events					
SS 2020	2560240	Methods in Economic Dynamics	SWS	Lecture (V)	Ott, Bälz

Competence Certificate

Alternative exam assessment.

Prerequisites

None

Recommendation

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012] and Economics II [2600014]. Further, it is assumed that students have interest in using quantitative-mathematical methods.

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



Methods in Economic Dynamics

2560240, SS 2020, SWS, Language: German/English, [Open in study portal](#)

Lecture (V)

Content

The economic exploitation of inventions is an important part of innovation economics. Intellectual property rights such as patents or trademarks play a central role. Within this workshop, the recording, processing and analysis of such intellectual property rights will be deepened, e.g. considering specific technologies. Students will learn how to work with relational databases, the econometric evaluation of recorded data, and methods for visualising them.

Learning objectives:

The student

- learns to query data sources.
- is able to analyse data with statistical methods.
- visualises and interprets data evaluations (e.g. using dashboards or methods of network analysis).

Recommendations:

An interest in working with data, basic knowledge on databases as well as basic knowledge in economics and statistics are advantageous.

Workload:

The total workload for this course is approximately 45 hours.

- Classes: ca. 5 h
- Self-study: ca. 40 h

Assessment:

Non exam assessment according to § 4 paragraph 3 of the examination regulation (SPO 2015).


Literature





Relevante Literatur wird in der Vorlesung bekanntgegeben.
 (Relevant literature will be announced in the lecture.)

T**6.229 Course: Methods in Innovation Management [T-WIWI-110263]**

Responsible: Dr. Daniel Jeffrey Koch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each winter term	1

Events					
WS 20/21	2545107	Methoden im Innovationsmanagement	2 SWS	Seminar (S) / 	Koch

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

Competence Certificate

Alternative exam assessments (§4(2), 3 SPO). The final grade is composed 75% of the grade of the written paper and 25% of the grade of the presentation.

Prerequisites

None.

Recommendation

Prior attendance of the course "Innovation Management: Concepts, Strategies and Methods" is recommended.

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

V**Methoden im Innovationsmanagement**

2545107, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

The seminar "Methods in Innovation Management" aims at the discussion and development of different methods for the structured generation of ideas in selected contexts. In a block seminar, methods and contexts are discussed, from which seminar topics are defined with the participants. These topics are to be worked on independently using methods and procedures. The results will be presented at a presentation date and then a written seminar paper will be prepared. This means that creativity methods and their combination will be presented and applied. The methods are worked on in a structured form and process-like sequence in order to clarify the advantages and disadvantages of different methods.

Literature

Werden in der ersten Veranstaltung bekannt gegeben.

T

6.230 Course: Mixed Integer Programming I [T-WIWI-102719]

Responsible: Prof. Dr. Oliver Stein

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101473 - Mathematical Programming](#)
[M-WIWI-102832 - Operations Research in Supply Chain Management](#)
[M-WIWI-103289 - Stochastic Optimization](#)

Type
Written examination

Credits
4,5

Recurrence
Irregular

Version
1

Exams				
SS 2020	7900249_SS2020_NK	Mixed Integer Programming I	Prüfung (PR)	Stein

Competence Certificate

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation.

The examination is held in the semester of the lecture and in the following semester.

Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration for the written examination is subject to fulfilling the prerequisite.

The examination can also be combined with the examination of *Mixed Integer Programming II* [25140]. In this case, the duration of the written examination takes 120 minutes.

Prerequisites

None

Recommendation

It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

Annotation

The lecture is offered irregularly. The curriculum of the next three years is available online (kop.iwr.kit.edu).

T

6.231 Course: Mixed Integer Programming II [T-WIWI-102720]**Responsible:** Prof. Dr. Oliver Stein**Organisation:** KIT Department of Economics and Management

Part of: [M-WIWI-101473 - Mathematical Programming](#)
[M-WIWI-102832 - Operations Research in Supply Chain Management](#)
[M-WIWI-103289 - Stochastic Optimization](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

Competence Certificate

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation.

The examination is held in the semester of the lecture and in the following semester.

Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration for the written examination is subject to fulfilling the prerequisite.

The examination can also be combined with the examination of *Mixed Integer Programming I* [2550138]. In this case, the duration of the written examination takes 120 minutes.

Prerequisites

None

Recommendation

It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

Annotation

The lecture is offered irregularly. The curriculum of the next three years is available online (kop.ior.kit.edu).

T

6.232 Course: Mobile Communication [T-INFO-101322]

Responsible: Prof. Dr. Oliver Waldhorst
Prof. Dr. Martina Zitterbart

Organisation: KIT Department of Informatics


Part of: [M-INFO-100785 - Mobile Communication](#)





Type
Oral examination

Credits
4

Recurrence
Each winter term

Version
1

Events					
WS 20/21	24643	Mobile Communications	2 SWS	Lecture (V) / 	Waldhorst, Jung
Exams					
SS 2020	7500073	Mobile Communication		Prüfung (PR)	Waldhorst, Zitterbart
WS 20/21	7500015	Mobile Communication		Prüfung (PR)	Waldhorst, Zitterbart

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

T**6.233 Course: Mobile Robots – Practical Course [T-INFO-105951]**

Responsible: Prof. Dr.-Ing. Rüdiger Dillmann
Organisation: KIT Department of Informatics
Part of: [M-INFO-102977 - Mobile Robots – Practical Course](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Each winter term	1

T**6.234 Course: Model Driven Software Development [T-INFO-101278]**


Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: [M-INFO-100741 - Model-Driven Software Development](#)





Type
Oral examination

Credits
3

Recurrence
Each winter term

Version
1

Events					
WS 20/21	24657	Model-Driven Software Engineering	2 SWS	Lecture (V) / 	Burger
Exams					
SS 2020	7500016	Model Driven Software Development	Prüfung (PR)		Burger, Reussner
WS 20/21	7500086	Model Driven Software Development	Prüfung (PR)		Reussner, Burger

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

T

6.235 Course: Modeling and Analyzing Consumer Behavior with R [T-WIWI-102899]

Responsible: Dr. Verena Dorner
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101448 - Service Management](#)
[M-WIWI-101506 - Service Analytics](#)
[M-WIWI-103118 - Data Science: Data-Driven User Modeling](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2540470	Modeling and Analyzing Consumer Behavior with R	2 SWS	Lecture (V)	Dorner, Greif-Winzrieth, Knierim
SS 2020	2540471	Übung zu Modeling and Analyzing Consumer Behaviour with R	1 SWS	Practice (Ü)	Knierim, Greif-Winzrieth, Dorner
Exams					
SS 2020	79791391	Modeling and Analyzing Consumer Behavior with R		Prüfung (PR)	Weinhardt

Competence Certificate

The assessment consists of a written exam (60 min) (according to §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

None

Recommendation

None

Annotation

Number of participants limited.

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

V

Modeling and Analyzing Consumer Behavior with R

Lecture (V)

2540470, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Literature

Field, A., Miles, J., Field, Z., Discovering Statistics Using R, SAGE 2014

Jones, O., Maillardet, R., Robinson, A., Scientific Programming and Simulation Using R, Chapman & Hall / CRC Press 2009

Venables, W.N., Smith, D.M. and the R Core Team, "An Introduction to R", 2012 (Version 2.15.2), <http://cran.r-project.org/doc/manuals/R-intro.pdf>

Wickham, Hadley, ggplot2: Elegant Graphics for Data Analysis (Use R!), Springer 2009 (2nd edition)

T


6.236 Course: Modeling and OR-Software: Advanced Topics [T-WIWI-106200]





Responsible: Prof. Dr. Stefan Nickel

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-102808 - Digital Service Systems in Industry](#)
[M-WIWI-102832 - Operations Research in Supply Chain Management](#)

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

Events					
WS 20/21	2550490	Modellieren und OR-Software: Fortgeschrittene Themen	3 SWS	Practical course (P) / 	Bakker
Exams					
SS 2020	00009	Modeling and OR-Software: Advanced Topics	Prüfung (PR)		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

Basic knowledge as conveyed in the module *Introduction to Operations Research* is assumed.

Successful completion of the course *Modeling and OR-Software: Introduction*.

Annotation

Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The lecture is held 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: Fortgeschrittene Themen

2550490, WS 20/21, 3 SWS, Language: German, [Open in study portal](#)

Practical course (P)
Online

Content

The advanced course is designated for Master students that already attended the introductory course or gained equivalent experience elsewhere, e.g. during a seminar or bachelor thesis. We will work on advanced topics and methods in OR, among others cutting planes, column generation and constraint programming. The Software used for the exercises is IBM ILOG CPLEX Optimization Studio. The associated modelling programming languages are OPL and ILOG Script.

Organizational issues

die genauen Termine werden auf der Homepage bekannt gegeben



6.237 Course: Models of Parallel Processing [T-INFO-101365]

Responsible: Thomas Worsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-100828 - Models of Parallel Processing](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each summer term	1

Events					
SS 2020	24606	Modelle der Parallelverarbeitung	3 SWS	Lecture (V)	Worsch, Vollmar
Exams					
SS 2020	75400003	Models of Parallel Processing		Prüfung (PR)	Worsch

T**6.238 Course: Multicore Computers and Computer Clusters [T-INFO-101325]**


Responsible: Prof. Dr. Walter Tichy
Organisation: KIT Department of Informatics
Part of: [M-INFO-100788 - Multicore Computers and Computer Clusters](#)

Type	Credits	Recurrence	Version
Oral examination	4	Each winter term	1

T**6.239 Course: Multicore Programming in Practice: Tools, Models, Languages [T-INFO-101565]****Responsible:** Prof. Dr. Walter Tichy**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100985 - Multicore Programming in Practice: Tools, Models, Languages](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Each winter term	1

T**6.240 Course: Multi-Dimensional Signal Processing and Image Exploitation with
Graphic Cards and Other Manycore-Processors [T-INFO-106278]****Responsible:** Prof. Dr.-Ing. Jürgen Beyerer
Dr. Thomas Perschke**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-103154 - Multi-dimensional Signal Processing and Image Exploitation with Graphic Cards and
Other Manycore-Processors](#)**Type**
Oral examination**Credits**
3**Recurrence**
Each winter term**Version**
1

Events					
WS 20/21	2400021	Multi-dimensional signal processing and image exploitation with graphic cards and other manycore-processors	2 SWS	Lecture (V) / 	Perschke
Exams					
SS 2020	7500309	Multi-Dimensional Signal Processing and Image Exploitation with Graphic Cards and Other Manycore-Processors		Prüfung (PR)	Beyerer
WS 20/21	750002400021	Multi-dimensional signal processing and image exploitation with graphic cards and other manycore-processors		Prüfung (PR)	Beyerer

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled**Prerequisites**
none.

T

6.241 Course: Multivariate Statistical Methods [T-WIWI-103124]

Responsible: Prof. Dr. Oliver Grothe
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)
[M-WIWI-101637 - Analytics and Statistics](#)
[M-WIWI-101639 - Econometrics and Statistics II](#)
[M-WIWI-103289 - Stochastic Optimization](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2550554	Multivariate Verfahren	2 SWS	Lecture (V)	Grothe
SS 2020	2550555	Übung zu Multivariate Verfahren	2 SWS	Practice (Ü)	Grothe, Kächele
Exams					
SS 2020	7900326	Multivariate Statistical Methods		Prüfung (PR)	Grothe

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation. A bonus program can improve the grade by one grade level (i.e. by 0.3 or 0.4).

The exam is offered every semester. Re-examinations are offered only for repeaters.

Prerequisites

None

Recommendation

The course covers highly advanced statistical methods with a quantitative focus. Hence, participants are necessarily expected to have advanced statistical knowledge, e.g. acquired in the course "Advanced Statistics". Without this, participation in the course is not advised.

Previous attendance of the course Analysis of Multivariate Data is recommended. Alternatively, the script can be provided to interested students.

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

V

Multivariate Verfahren

2550554, SS 2020, 2 SWS, [Open in study portal](#)


Lecture (V)




Literature

Skript zur Vorlesung

T

6.242 Course: Natural Language Processing and Dialog Modeling [T-INFO-101473]**Responsible:** Prof. Dr. Alexander Waibel**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100899 - Natural Language Processing and Dialog Modeling](#)**Type**
Oral examination**Credits**
3**Recurrence**
Each winter term**Version**
1

Events					
WS 20/21	2400007	Natural Language Processing and dialog modeling	2 SWS	Lecture (V) / 	Waibel, Herrmann, Pham
Exams					
SS 2020	7500045	Natural Language Processing and Dialog Modeling		Prüfung (PR)	Waibel
WS 20/21	7500168	Natural Language Processing and Dialog Modeling		Prüfung (PR)	Waibel, Stüker

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

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

V

Natural Language Processing and dialog modeling2400007, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)**Lecture (V)**
Online**Content**

In order that we can communicate with a computer successfully, it has to be able to interpret sentences like "I don't understand what you mean by this!". For that it has to know what "to not understand" means and what "by this" refers to. This lecture gives an overview of different subject areas and applied methods in Natural Language Processing (NLP) and dialog modeling. Concerning NLP, the covered topics will vary in complexity such as Part-of-Speech Tagging, Sentiment Analysis, Word Sense Disambiguation (WSD) and Question Answering (QA). At the same time, various techniques will be presented with which the corresponding components can be realized. Among those are Conditional Random Fields (CRFs) and Maximum Entropy Models (MaxEnt). Furthermore, topics and methods of NLP will be emphasized which are especially relevant for realizing spoken dialog systems. In Dialog Modeling different areas like Social Dialog, Goal-Oriented Dialog, Multimodal Dialog and Error Handling will be addressed. These involve additional techniques like Partially Observable Markov Decision Processes (POMDPs).

T**6.243 Course: Natural Language Processing and Software Engineering [T-INFO-101272]**


Responsible: Prof. Dr.-Ing. Anne Koziolk
Organisation: KIT Department of Informatics
Part of: [M-INFO-100735 - Natural Language Processing and Software Engineering](#)




Type
Oral examination

Credits
3

Recurrence
Each winter term

Version
1

Events					
WS 20/21	24187	Sprachverarbeitung in der Softwaretechnik	2 SWS	Lecture (V) / 	Koziolk, Hey
Exams					
SS 2020	7500185	Natural Language Processing and Software Engineering	Prüfung (PR)		Tichy

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

T

6.244 Course: Network Security: Architectures and Protocols [T-INFO-101319]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [M-INFO-100782 - Network Security: Architectures and Protocols](#)
[M-WIWI-104812 - Information Systems: Engineering and Transformation](#)

Type	Credits	Recurrence	Version
Oral examination	4	Each summer term	1

Events					
SS 2020	24601	Netsicherheit: Architekturen und Protokolle	2 SWS	Lecture (V)	Baumgart, Bless, Heseding, Zitterbart
Exams					
SS 2020	7500072	Network Security: Architectures and Protocols	Prüfung (PR)		Zitterbart
WS 20/21	7500014	Network Security: Architectures and Protocols	Prüfung (PR)		Zitterbart

T

6.245 Course: Next Generation Internet [T-INFO-101321]

Responsible: Dr.-Ing. Roland Bless
Prof. Dr. Martina Zitterbart

Organisation: KIT Department of Informatics

Part of: [M-INFO-100784 - Next Generation Internet](#)

Type	Credits	Recurrence	Version
Oral examination	4	Each summer term	1

Events					
SS 2020	24674	Next Generation Internet	2 SWS	Lecture (V)	Bless
Exams					
SS 2020	7500074	Next Generation Internet		Prüfung (PR)	Bless, Zitterbart
WS 20/21	7500016	Next Generation Internet		Prüfung (PR)	Bless, Zitterbart

T

6.246 Course: Non- and Semiparametrics [T-WIWI-103126]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101638 - Econometrics and Statistics I](#)
[M-WIWI-101639 - Econometrics and Statistics II](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

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 "*Applied Econometrics*" [2520020]

Annotation




The course takes place every second winter semester: 2018/19 then 2020/21





T

6.247 Course: Nonlinear Optimization I [T-WIWI-102724]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	4

Events					
WS 20/21	2550111	Nonlinear Optimization I	2 SWS	Lecture (V) / 	Stein
WS 20/21	2550112	Exercises Nonlinear Optimization I + II	SWS	Practice (Ü) / 	Stein
WS 20/21	2550142	Rechnerübung zu Nichtlineare Optimierung I + II	SWS	Practice (Ü) / 	Stein
Exams					
SS 2020	7900252_SS2020_NK	Nonlinear Optimization I		Prüfung (PR)	Stein

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 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:

V

Nonlinear Optimization I

2550111, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

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





T

6.248 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-101473 - Mathematical Programming](#)

Type	Credits	Recurrence	Version
Written examination	9	Each winter term	6

Events					
WS 20/21	2550111	Nonlinear Optimization I	2 SWS	Lecture (V) / 	Stein
WS 20/21	2550112	Exercises Nonlinear Optimization I + II	SWS	Practice (Ü) / 	Stein
WS 20/21	2550113	Nonlinear Optimization II	2 SWS	Lecture (V) / 	Stein
WS 20/21	2550142	Rechnerübung zu Nichtlineare Optimierung I + II	SWS	Practice (Ü) / 	Stein
Exams					
SS 2020	7900266_SS2020_NK	Nonlinear Optimization I and II		Prüfung (PR)	Stein

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

Competence Certificate

The assessment consists of a written exam (120 minutes) according to Section 4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.

The exam takes place in the semester of the lecture and in the following semester.

Prerequisites

None.

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.

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

V

Nonlinear Optimization I

2550111, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

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 20/21, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)
Online**

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

**6.249 Course: Nonlinear Optimization II [T-WIWI-102725]**

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	3

Events					
WS 20/21	2550112	Exercises Nonlinear Optimization I + II	SWS	Practice (Ü) /	Stein
WS 20/21	2550113	Nonlinear Optimization II	2 SWS	Lecture (V) /	Stein
Exams					
SS 2020	7900258_SS2020_NK	Nonlinear Optimization II		Prüfung (PR)	Stein

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 and possibly of a compulsory prerequisite.

The exam takes place in the semester of the lecture and in the following semester.

The exam can also be combined with the examination of *Nonlinear Optimization I* [2550111]. In this case, the duration of the written exam takes 120 minutes.

Prerequisites

None.

Annotation

Part I and II of the lecture are held consecutively in the same semester.

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

**Nonlinear Optimization II**

2550113, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)
Online**

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

6.250 Course: Operations Research in Health Care Management [T-WIWI-102884]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-102805 - Service Operations](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	2

Events					
SS 2020	2550495	Operations Research in Health Care Management	2 SWS	Lecture (V)	Nickel
SS 2020	2550496	Übungen zu OR im Health Care Management	1 SWS	Practice (Ü)	Bakker
Exams					
SS 2020	7900229	Operations Research in Health Care Management		Prüfung (PR)	Nickel

Competence Certificate

The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the lecture and the following lecture.

Prerequisites

None

Recommendation

Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

Annotation

The course is offered irregularly. Planned lectures for the next three years can be found in the internet at <http://dol.ior.kit.edu/english/Courses.php>.

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

V

Operations Research in Health Care Management

2550495, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Literature**Weiterführende Literatur:**



- Fleßa: Grundzüge der Krankenhausbetriebslehre, Oldenbourg, 2007
- Fleßa: Grundzüge der Krankenhaussteuerung, Oldenbourg, 2008
- Hall: Patient flow: reducing delay in healthcare delivery, Springer, 2006





T

6.251 Course: Operations Research in Supply Chain Management [T-WIWI-102715]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)
[M-WIWI-102805 - Service Operations](#)
[M-WIWI-102832 - Operations Research in Supply Chain Management](#)
[M-WIWI-103289 - Stochastic Optimization](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	2

Events					
WS 20/21	2550480	Operations Research in Supply Chain Management	2 SWS	Lecture (V) / 	Nickel
WS 20/21	2550481	Übungen zu OR in Supply Chain Management	1 SWS	Practice (Ü) / 	Dunke
Exams					
SS 2020	7900336	Operations Research in Supply Chain Management		Prüfung (PR)	Nickel

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

Competence Certificate

The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the lecture and the following lecture.

Prerequisites

None

Recommendation

Basic knowledge as conveyed in the module Introduction to Operations Research and in the lectures Facility Location and Strategic SCM, Tactical and operational SCM is assumed.

Annotation

The course is offered irregularly. Planned lectures for the next three years can be found in the internet at <http://dol.ior.kit.edu/english/Courses.php>.

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

V

Operations Research in Supply Chain Management

2550480, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)
Online**

Content


Supply Chain Management constitutes a general tool for logistics process planning in supply networks. To an increasing degree quantitative decision support is provided by methods and models from Operations Research. The lecture "OR in Supply Chain Management" conveys concepts and approaches for solving practical problems and presents an insight to current research topics. The lecture's focus is set on modeling and solution methods for applications originating in different domains of a supply chain. The emphasis is put on mathematical methods like mixed integer programming, valid inequalities or column generation, and the derivation of optimal solution strategies.





In form and content, the lecture addresses all levels of Supply Chain Management: After a short introduction, the tactical and operational level will be discussed with regard to inventory models, scheduling as well as cutting and packing. The strategic level will be discussed in terms of layout planning. Another main focus of the lecture is the application of methods from online optimization. This optimization discipline has gained more and more importance in the optimization of supply chains over the several past years due to an increasing amount of dynamic data flows.

Literature

- Simchi-Levi, D.; Chen, X.; Bramel, J.: The Logic of Logistics: Theory, Algorithms, and Applications for Logistics and Supply Chain Management, 2nd edition, Springer, 2005
- Simchi-Levi, D.; Kaminsky, P.; Simchi-Levi, E.: Designing and Managing the Supply Chain: Concepts, Strategies, and Case Studies, McGraw-Hill, 2000
- Silver, E. A.; Pyke, D. F.; Peterson, R.: Inventory Management and Production Planning and Scheduling, 3rd edition, Wiley, 1998
- Blazewicz, J.: Handbook on Scheduling - From Theory to Applications, Springer, 2007
- Pinedo, M. L.: Scheduling - Theory, Algorithms, and Systems (3rd edition), Springer, 2008
- Dyckhoff, H.; Finke, U.: Cutting and Packing in Production and Distribution - A Typology and Bibliography, Physica-Verlag, 1992
- Borodin, A.; El-Yaniv, R.: Online Computation and Competitive Analysis, Cambridge University Press, 2005
- Francis, R. L.; McGinnis, L. F.; White, A.: Facility Layout and Location: An Analytical Approach, 2nd edition, Prentice-Hall, 1992

T**6.252 Course: Optimization and Synthesis of Embedded Systems (ES1) [T-INFO-101367]****Responsible:** Prof. Dr.-Ing. Jörg Henkel**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100830 - Optimization and Synthesis of Embedded Systems \(ES1\)](#)**Type**
Oral examination**Credits**
3**Recurrence**
Each winter term**Version**
1

Events					
WS 20/21	2424143	Optimisation and synthesis of embedded systems (ES1)	2 SWS	Lecture (V) / 	Bauer, Henkel
Exams					
SS 2020	7500038	VL: Optimization and synthesis of embedded systems (ES1)	Prüfung (PR)		Henkel
WS 20/21	7500085	VL: Optimization and synthesis of embedded systems (ES1)	Prüfung (PR)		Henkel


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





T

6.253 Course: Optimization Models and Applications [T-WIWI-110162]

Responsible: Dr. Nathan Sudermann-Merx
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)
[M-WIWI-102832 - Operations Research in Supply Chain Management](#)
[M-WIWI-103289 - Stochastic Optimization](#)

Type	Credits	Recurrence	Version
Written examination	4,5	see Annotations	1

Events					
WS 20/21	2550140	Optimization Models and Application	2 SWS	Lecture (V) / 	Sudermann-Merx

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

Competence Certificate

The examination will take place for the last time in the winter semester 2020/2021.

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

The prerequisite for participation in the exam is the achievement of a minimum number of points in delivery sheets. Details will be announced at the beginning of the course.

Prerequisites

None.

Annotation




The course will take place for the last time in the winter semester 20/21.





T

6.254 Course: Optimization under Uncertainty [T-WIWI-106545]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103289 - Stochastic Optimization](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 20/21	2550464	Optimierungsansätze unter Unsicherheit	SWS	Lecture (V) / 	Rebennack
WS 20/21	2550465	Übungen zu Optimierungsansätze unter Unsicherheit	SWS	Practice (Ü) / 	Rebennack, Füllner
WS 20/21	2550466		2 SWS	Practice (Ü) / 	Rebennack, Füllner
Exams					
SS 2020	7900292	Optimization under Uncertainty		Prüfung (PR)	Rebennack

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 every the semester.

Prerequisites

None.



6.255 Course: Panel Data [T-WIWI-103127]

Responsible: apl. Prof. Dr. Wolf-Dieter Heller
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101638 - Econometrics and Statistics I](#)
[M-WIWI-101639 - Econometrics and Statistics II](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2520320	Panel Data	2 SWS	Lecture (V)	Heller
SS 2020	2520321	Übungen zu Paneldaten	2 SWS	Practice (Ü)	Heller
Exams					
SS 2020	7900115	Panel Data		Prüfung (PR)	Heller

Prerequisites

None

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



Panel Data

2520320, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

Content:

Fixed-Effects-Models, Random-Effects-Models, Time-Demeaning

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Exam preparation: 40 hours

Literature

Wooldridge, J. M. (2002). *Econometric analysis of cross section and panel data*. Cambridge and London: MIT Press.

Wooldridge, J. M. (2009). *Introductory Econometrics: A Modern Approach* (5th ed.). Mason, Ohio: South-Western Cengage Learning.

T**6.256 Course: Parallel Algorithms [T-INFO-101333]**


Responsible: Prof. Dr. Peter Sanders
Organisation: KIT Department of Informatics
Part of: [M-INFO-100796 - Parallel Algorithms](#)





Type
Oral examination

Credits
5

Recurrence
Each winter term

Version
1

Events					
WS 20/21	2400053	Parallel Algorithms	2/1 SWS	Lecture (V) / 	Sanders, Hespe, Funke
Exams					
SS 2020	75489	Parallel Algorithms		Prüfung (PR)	Sanders

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

T

6.257 Course: Parallel Computer Systems and Parallel Programming [T-INFO-101345]

Responsible: Prof. Dr. Achim Streit

Organisation: KIT Department of Informatics

Part of: [M-INFO-100808 - Parallel Computer Systems and Parallel Programming](#)

Type	Credits	Recurrence	Version
Oral examination	4	Each summer term	1

Events					
SS 2020	24617	Parallel computer systems and parallel programming	2 SWS	Lecture (V)	Streit, Häfner
Exams					
SS 2020	7500141	Parallel computer systems and parallel programming		Prüfung (PR)	Streit

**6.258 Course: Parametric Optimization [T-WIWI-102855]**

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

Events					
WS 20/21	2550115	Parametric Optimization	2 SWS	Lecture (V) /	Stein
WS 20/21	2550116	Übung zu Parametrische Optimierung	2 SWS	Practice (Ü) /	Stein, Neumann

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 examination is held in the semester of the lecture and in the following semester.

Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration for the written examination is subject to fulfilling the prerequisite.

Prerequisites

None

Recommendation

It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

Annotation

The lecture is offered irregularly. The curriculum of the next three years is available online (www.ior.kit.edu).

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

**Parametric Optimization**

2550115, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)
Online**

Content

Parametric optimization deals with the influence of parameters on the solution of optimization problems. In optimization practice, such investigations play a fundamental role in order to be able to assess the quality of a numerically obtained solution or to make quantitative statements about its parameter dependence. Furthermore, a number of parametric optimization methods exist, and parametric problems occur in applications such as game theory, geometric optimization problems, and robust optimization. The lecture gives a mathematically sound introduction to these topics and is structured as follows:

- Introductory examples and terminology
- Sensitivity
- Stability and regularity conditions
- Applications: semi-infinite optimization and Nash games

Remark:

Prior to the attendance of this lecture, it is strongly recommend to acquire basic knowledge on optimization problems in one of the lectures "Global Optimization I and II" and "Nonlinear Optimization I and II".

Learning objectives:

The student

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

Literature

- J.F. Bonnans, A. Shapiro, Perturbation Analysis of Optimization Problems, Springer, New York, 2000
- W. Dinkelbach, Sensitivitätsanalysen und parametrische Programmierung, Springer, Berlin, 1969
- J. Guddat, F. Guerra Vasquez, H.Th. Jongen, Parametric Optimization: Singularities, Pathfollowing and Jumps, Wiley, Chichester, and Teubner, Stuttgart, 1990
- R.T. Rockafellar, R.J.B. Wets, Variational Analysis, Springer, Berlin, 1998

T**6.259 Course: Patent Law [T-INFO-101310]**

Responsible: Markus Hössle
Matthias Koch

Organisation: KIT Department of Informatics

Part of: [M-INFO-101215 - Intellectual Property Law](#)

Type
Written examination

Credits
3

Recurrence
Each summer term

Version
2

Events					
SS 2020	24656	Patent Law	2 SWS	Lecture (V)	Hössle, Koch
Exams					
SS 2020	7500062	Patent Law		Prüfung (PR)	Dreier, Matz

T

6.260 Course: Pattern Recognition [T-INFO-101362]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: [M-INFO-100825 - Pattern Recognition](#)

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	1

Events					
SS 2020	24675	Pattern Recognition	2 SWS	Lecture (V)	Beyerer
Exams					
SS 2020	7500032	Pattern Recognition		Prüfung (PR)	Beyerer
WS 20/21	7500111	Pattern Recognition		Prüfung (PR)	Beyerer

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

V

Pattern Recognition

24675, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature**Weiterführende Literatur**

- Richard O. Duda, Peter E. Hart, Stork G. David. Pattern Classification. Wiley-Interscience, second edition, 2001
- K. Fukunaga. Introduction to Statistical Pattern Recognition. Academic Press, second edition, 1997
- R. Hoffman. Signalanalyse und -erkennung. Springer, 1998
- H. Niemann. Pattern analysis and understanding. Springer, second edition, 1990
- J. Schürmann. Pattern classification. Wiley & Sons, 1996
- S. Theodoridis, K. Koutroumbas. Pattern recognition. London: Academic, 2003
- V. N. Vapnik. The nature of statistical learning theory. Springer, second edition, 2000

T

6.261 Course: Personalization and Services [T-WIWI-102848]

Responsible: Andreas Sonnenbichler
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101410 - Business & Service Engineering](#)
[M-WIWI-101470 - Data Science: Advanced CRM](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2540533	Personalization & Services	2 SWS	Lecture (V)	Sonnenbichler, Geyer-Schulz
WS 20/21	2540534	Exercise Personalization & Services	1 SWS	Practice (Ü)	Sonnenbichler, Geyer-Schulz
Exams					
SS 2020	7900310	Personalization and Services (Nachklausur WS 2019/2020)		Prüfung (PR)	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 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.

Prerequisites

None

Recommendation

None

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

V

Personalization & Services

2540533, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature

Die Vorlesung orientiert sich an aktuellen wissenschaftlichen Veröffentlichungen. Die Literaturliste finden Sie nach Themen gegliedert jeweils am Ende der Vorlesungseinheiten.

T

6.262 Course: Photorealistic Rendering [T-INFO-101268]

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher
Organisation: KIT Department of Informatics
Part of: [M-INFO-100731 - Photorealistic Rendering](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each summer term	1



Events					
SS 2020	24682	Fotorealistische Bildsynthese	2 SWS	Lecture (V)	Schudeiske
Exams					
SS 2020	7500124	Photorealistic Rendering		Prüfung (PR)	Dachsbacher

T

6.263 Course: Planning and Management of Industrial Plants [T-WIWI-102631]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101471 - Industrial Production II](#)

Type	Credits	Recurrence	Version
Written examination	5,5	Each winter term	1

Events					
WS 20/21	2581952	Planning and Management of Industrial Plants	2 SWS	Lecture (V) / 	Glöser-Chahoud, Schultmann
WS 20/21	2581953	Übungen Anlagenwirtschaft	2 SWS	Practice (Ü) / 	Glöser-Chahoud, Heck, Heinzmann
Exams					
SS 2020	7981952	Planning and Management of Industrial Plants	Prüfung (PR)	Schultmann	

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

Competence Certificate

The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

None

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

V

Planning and Management of Industrial Plants

2581952, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

Industrial plant management incorporates a complex set of tasks along the entire life cycle of an industrial plant, starting with the initiation and erection up to operating and dismantling.

During this course students will get to know special characteristics of industrial plant management. Students will learn important methods to plan, realize and supervise the supply, start-up, maintenance, optimisation and shut-down of industrial plants. Alongside, students will have to handle the inherent question of choosing between technologies and evaluating each of them. This course pays special attention to the specific characteristics of plant engineering, commissioning and investment.

Literature

Wird in der Veranstaltung bekannt gegeben.

T

6.264 Course: Portfolio and Asset Liability Management [T-WIWI-103128]

Responsible: Dr. Mher Safarian
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101639 - Econometrics and Statistics II](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2520357	Portfolio and Asset Liability Management	2 SWS	Lecture (V)	Safarian
SS 2020	2520358	Übungen zu Portfolio and Asset Liability Management	2 SWS	Practice (Ü)	Safarian
Exams					
SS 2020	7900116	Portfolio and Asset Liability Management		Prüfung (PR)	Safarian

Competence Certificate

The assessment of this course consists of a written examination (following §4(2), 1 SPOs, 180 min.).

Prerequisites

None

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

V

Portfolio and Asset Liability Management

2520357, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content**Learning objectives:**

Knowledge of various portfolio management techniques in the financial industry.

Content:

Portfolio theory: principles of investment, Markowitz- portfolio analysis, Modigliani-Miller theorems and absence of arbitrage, efficient markets, capital asset pricing model (CAPM), multi factorial CAPM, arbitragepricing theory (APT), arbitrage and hedging, multi factorial models, equity-portfolio management, passive strategies, active investment

Asset liability: statistical portfolio analysis in stock allocation, measures of success, dynamic multi seasonal models, models in building scenarios, stochastic programming in bond and liability management, optimal investment strategies, integrated asset liability management

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Exam preparation: 40 hours

Organizational issues

Blockveranstaltung


Literature





To be announced in the lecture

T**6.265 Course: Practical Course Applied Telematics [T-INFO-103585]**

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [M-INFO-101889 - Practical Course Applied Telematics](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Each winter term	2

Events					
WS 20/21	24316	Praxis der Telematik	4 SWS	Practical course (P) /	 Bauer, Hock, Zitterbart

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

T

6.266 Course: Practical Course Automatic Speech Recognition [T-INFO-104775]

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: [M-INFO-102411 - Practical Course Automatic Speech Recognition](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each winter term	1

Events					
WS 20/21	24298	Praktikum Automatische Spracherkennung	2 SWS	Practical course (P) /	Waibel, Stüker
Exams					
WS 20/21	7500131	Practical Course Automatic Speech Recognition		Prüfung (PR)	Waibel, Stüker

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

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

V

Praktikum Automatische Spracherkennung

24298, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Practical course (P)
Online

Content

- In a number of experiments different systems for automatic speech recognition will be built step-by-step
- The use of different tools and techniques from the area will be practiced


Literature**Weiterführende Literatur**





- A. Waibel, K.F. Lee: Readings in Speech Recognition
- F. Jelinek: Statistical Methods of Speech Recognition
- Schukat-Talamazzini: Automatische Spracherkennung

T**6.267 Course: Practical Course Circuit Design with Intel Galileo [T-INFO-105580]**

Responsible: Prof. Dr. Mehdi Baradaran Tahoori
Organisation: KIT Department of Informatics
Part of: [M-INFO-102353 - Practical Course Circuit Design with Intel Galileo](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2020	2400092	Circuit Design with Intel Galileo	4 SWS	Practical course (P)	Tahoori
WS 20/21	2400116	Circuit Design with Intel Galileo	4 SWS	Practical course (P) / 	Tahoori
Exams					
SS 2020	7500103	Practical Course Circuit Design with Intel Galileo	Prüfung (PR)		Tahoori
WS 20/21	7500148	Practical Course Circuit Design with Intel Galileo	Prüfung (PR)		Tahoori

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

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

V**Circuit Design with Intel Galileo**2400092, SS 2020, 4 SWS, Language: English, [Open in study portal](#)**Practical course (P)****Organizational issues**

As a full week block after the end of the lectures

V**Circuit Design with Intel Galileo**2400116, WS 20/21, 4 SWS, Language: English, [Open in study portal](#)**Practical course (P)
On-Site****Organizational issues**

As a full week block after the end of the lectures

T**6.268 Course: Practical Course Computer Vision for Human-Computer Interaction [T-INFO-105943]****Responsible:** Prof. Dr.-Ing. Rainer Stiefelhagen**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-102966 - Practical Course Computer Vision for Human-Computer Interaction](#)

Type
Examination of another type

Credits
6

Recurrence
Each summer term

Version
3

Exams				
WS 20/21	7500136	Practical Course Computer Vision for Human-Computer Interaction	Prüfung (PR)	Stiefelhagen


T**6.269 Course: Practical Course Data Management and Data Analysis [T-INFO-106066]****Responsible:** Prof. Dr. Achim Streit**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-103050 - Practical Course Data Management and Data Analysis](#)





Type
Examination of another type

Credits
4

Recurrence
Each term

Version
1

Events					
SS 2020	2400068	Data management and data analysis	2 SWS	Practical course (P)	Streit, Schlitter, Petzold, Sundermann
WS 20/21	2400043	Data management and data analysis	2 SWS	Practical course (P) / 	Streit, Schlitter, Petzold, Sundermann
Exams					
SS 2020	7500269	Practical Course Data management and data analysis	Prüfung (PR)		Streit


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





T**6.270 Course: Practical Course Decentralized Systems and Network Services [T-INFO-106063]**

Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: [M-INFO-103047 - Practical Course Decentralized Systems and Network Services](#)

Type	Credits	Recurrence	Version
Examination of another type	4	Irregular	1

T**6.271 Course: Practical Course Digital Design & Test Automation Flow [T-INFO-105565]****Responsible:** Prof. Dr. Mehdi Baradaran Tahoori**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-102570 - Practical Course: Digital Design & Test Automation Flow](#)**Type**
Examination of another type**Credits**
3**Recurrence**
Each winter term**Version**
1

Events				
WS 20/21	24318	Digital Design & Test Automation Flow	4 SWS	Practical course (P) /  Tahoori
Exams				
WS 20/21	7500084	Practical Course Digital Design & Test Automation Flow	Prüfung (PR)	Tahoori

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

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

V**Digital Design & Test Automation Flow**24318, WS 20/21, 4 SWS, [Open in study portal](#)**Practical course (P)**
On-Site**Organizational issues**

As a full week block after the end of the lectures


T**6.272 Course: Practical Course Engineering Approaches to Software Development [T-INFO-108791]****Responsible:** Prof. Dr. Ralf Reussner**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-104254 - Practical: Course Engineering Approaches to Software Development](#)





Type
Examination of another type

Credits
6

Recurrence
Each term

Version
1


Events				
WS 20/21	2400093	Practical Course Engineering Approaches to Software Development	4 SWS	Practical course (P) /  Reussner
Exams				
SS 2020	7500184	Practical Course Engineering Approaches to Software Development	Prüfung (PR)	Burger, Reussner
WS 20/21	7500234	Practical Course Engineering Approaches to Software Development	Prüfung (PR)	Reussner





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

T**6.273 Course: Practical Course FPGA Programming [T-INFO-105576]**

Responsible: Prof. Dr. Mehdi Baradaran Tahoori
Organisation: KIT Department of Informatics
Part of: [M-INFO-102661 - Practical Course FPGA Programming](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2020	2400106	FPGA Programming	4 SWS	Practical course (P)	Tahoori
WS 20/21	2400106	FPGA Programming	4 SWS	Practical course (P) / 	Tahoori
Exams					
SS 2020	7500087	Practical Course FPGA Programming	Prüfung (PR)		Tahoori
WS 20/21	7500083	Practical Course FPGA Programming	Prüfung (PR)		Tahoori

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

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

V**FPGA Programming**

2400106, SS 2020, 4 SWS, Language: English, [Open in study portal](#)

Practical course (P)**Organizational issues**

As a full week block after the end of the lectures

V**FPGA Programming**

2400106, WS 20/21, 4 SWS, [Open in study portal](#)

**Practical course (P)
On-Site****Organizational issues**

As a full week block after the end of the lectures

T**6.274 Course: Practical Course Model-Driven Software Development [T-INFO-103029]****Responsible:** Prof. Dr. Ralf Reussner**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-101579 - Practical Course Model-Driven Software Development](#)

Type
Examination of another type

Credits
6

Recurrence
Each winter term

Version
1

Events					
SS 2020	2400091	Practical Course Model-Driven Software Development	4 SWS	Practical course (P)	Burger
Exams					
SS 2020	7500017	Practical Course Model-Driven Software Development		Prüfung (PR)	Reussner

T**6.275 Course: Practical Course Natural Language Dialog Systems [T-INFO-104780]**

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: [M-INFO-102414 - Natural Language Dialog Systems](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Irregular	1

T**6.276 Course: Practical Course on Network Security Research [T-INFO-110938]**

Responsible: Mario Hock
Prof. Dr. Martina Zitterbart

Organisation: KIT Department of Informatics

Part of: [M-INFO-105413 - Practical Course on Network Security Research](#)


Type	Credits	Recurrence	Version
Examination of another type	3	Irregular	1





Exams				
SS 2020	7500278	Practical Course on Network Security Research	Prüfung (PR)	Zitterbart

T**6.277 Course: Practical Course Protocol Engineering [T-INFO-104386]**

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [M-INFO-102092 - Practical Course Protocol Engineering](#)

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

Events					
WS 20/21	2400086	Protocol Engineering	4 SWS	Practical course (P) /	 Bauer, Zitterbart

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


T**6.278 Course: Practical Course Research Project: Hands-on Anthropomatics [T-INFO-105278]****Responsible:** Prof. Dr.-Ing. Uwe Hanebeck**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-102568 - Practical Course Research Project: Hands-on Anthropomatics](#)





Type
Examination of another type

Credits
8

Recurrence
Each term

Version
1

Events					
SS 2020	24871	Research Project: Hands-on Anthropomatics	4 SWS	Practical course (P)	Hanebeck, Basarur
WS 20/21	24281	Laboratory Research Project: Hands-on Anthropomatics	4 SWS	Practical course (P) / 	Hanebeck, Fennel
Exams					
SS 2020	7500050	Laboratory: Research Project "Hands-on Anthropomatics"		Prüfung (PR)	Hanebeck, Noack
WS 20/21	7500103	Laboratory: Research Project "Hands-on Anthropomatics"		Prüfung (PR)	Hanebeck

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

T**6.279 Course: Practical Course Software Defined Networking [T-INFO-103587]**

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [M-INFO-101891 - Practical Course Software Defined Networking](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Each summer term	1

Events					
SS 2020	24899	Projektpraktikum: Software Defined Networking	4 SWS	Practical course (P)	Bauer, Zitterbart
Exams					
SS 2020	7500167	Practical Course: Software Defined Networking		Prüfung (PR)	Zitterbart

T**6.280 Course: Practical Course: Analysis of Complex Data Sets [T-INFO-105796]**

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-102807 - Practical Course: Analysis of Complex Data Sets](#)


Type	Credits	Recurrence	Version
Completed coursework	4	Irregular	1





Exams				
SS 2020	7500096	Practical Course Analysis of Complex Data Sets	Prüfung (PR)	Böhm

T**6.281 Course: Practical Course: Database Systems [T-INFO-103201]**

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101662 - Practical Course: Database Systems](#)

Type	Credits	Recurrence	Version
Completed coursework	4	Each winter term	2

Events				
WS 20/21	24286	Datenbankpraktikum	2 SWS	Practical course (P) /  Böhm


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





T

6.282 Course: Practical Course: Discrete Freeform Surfaces [T-INFO-103208]


Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101667 - Practical Course: Discrete Freeform Surfaces](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Each winter term	1

Events					
SS 2020	24876	Praktikum Diskrete Freiformflächen	4 SWS	Practical course (P)	Prautzsch, Xu
WS 20/21	2400059	Praktikum	SWS	Practical course (P) / 	Prautzsch, Xu
Exams					
SS 2020	7500191	Practical Course Discrete Freeform Surfaces	Prüfung (PR)		Prautzsch

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

T**6.283 Course: Practical Course: General-Purpose Computation on Graphics Processing Units [T-INFO-109914]****Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100724 - Practical Course: General-Purpose Computation on Graphics Processing Units](#)**Type**
Examination of another type**Credits**
3**Recurrence**
Each term**Version**
1


Events					
SS 2020	24911	Praktikum General-Purpose Computation on Graphics Processing Units	2 SWS	Practical course (P)	Zeidan, Herveau, Tessari, Dachsbacher
WS 20/21	24297	Praktikum General-Purpose Computation on Graphics Processing Units	2 SWS	Practical course (P) / 	Tessari, Zeidan, Herveau, Dachsbacher
Exams					
SS 2020	7500134	Practical Course: General-Purpose Computation on Graphics Processing Units		Prüfung (PR)	Dachsbacher





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

T**6.284 Course: Practical Course: Geometric Modeling [T-INFO-103207]**

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101666 - Practical Course: Geometric Modeling](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each winter term	1

Events					
SS 2020	2400026	Praktikum Unterteilungsalgorithmen	2 SWS	Practical course (P)	Prautzsch, Xu
SS 2020	2400107	Praktikum Geometrisches Modellieren	2 SWS	Practical course (P)	Prautzsch, Xu
WS 20/21	2400024	Praktikum	SWS	Practical course (P) / 	Xu, Prautzsch
Exams					
SS 2020	7500212	Practical course: Geometric Modeling		Prüfung (PR)	Prautzsch

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

T**6.285 Course: Practical Course: Hot Research Topics in Computer Graphics [T-INFO-109577]****Responsible:** Prof. Dr.-Ing. Carsten Dachsbacher**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-104699 - Practical Course: Hot Research Topics in Computer Graphics](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Irregular	1

T**6.286 Course: Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data [T-INFO-106219]**

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-103128 - Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data](#)

Type	Credits	Recurrence	Version
Completed coursework	4	Irregular	1

T**6.287 Course: Practical Course: Neural Network Exercises [T-INFO-106259]**

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: [M-INFO-103143 - Practical Course: Neural Network Exercises](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each winter term	1

Exams				
WS 20/21	7500109	Practical Course: Neural Network Exercises	Prüfung (PR)	Waibel

T

6.288 Course: Practical Course: Programme Verification [T-INFO-102953]

Responsible: Prof. Dr. Bernhard Beckert

Organisation: KIT Department of Informatics

Part of: [M-INFO-101537 - Practical Course: Programme Verification](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Irregular	1

Exams				
SS 2020	7500281	Practical Course: Programme Verification	Prüfung (PR)	Beckert
WS 20/21	7500281	Practical Course: Programme Verification	Prüfung (PR)	Beckert

T**6.289 Course: Practical Course: Smart Data Analytics [T-INFO-106426]**

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: [M-INFO-103235 - Practical Course: Smart Data Analytics](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Each summer term	1

Events					
SS 2020	24895	Practical Course: Smart Data Analytics	4 SWS	Practical course (P)	Beigl, Riedel, Ravivanpong, Zhou
Exams					
SS 2020	7500243	Practical Course: Smart Data Analytics		Prüfung (PR)	Beigl, Riedel

T

6.290 Course: Practical Course: Virtual Neurorobotics in the Human Brain Project [T-INFO-106417]**Responsible:** Prof. Dr.-Ing. Rüdiger Dillmann**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-103227 - Practical Course: Virtual Neurorobotics in the Human Brain Project](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Irregular	1

RecommendationPrevious visit of the lectures *Machine Learning* or *Cognitive Systems* is helpful but not mandatory.

T**6.291 Course: Practical Course: Visual Computing 2 [T-INFO-103000]**


Responsible: Prof. Dr.-Ing. Carsten Dachsbacher
Organisation: KIT Department of Informatics
Part of: [M-INFO-101567 - Practical Course: Visual Computing 2](#)





Type
Examination of another type

Credits
6

Recurrence
Each term

Version
4

Events					
SS 2020	24909	Praktikum GPU-Computing	4 SWS	Practical course (P)	Zeidan, Herveau, Tessari, Dachsbacher
WS 20/21	24283	Praktikum GPU-Computing	4 SWS	Practical course (P) / 	Tessari, Zeidan, Herveau, Dachsbacher
Exams					
SS 2020	7500125	Practical Course GPU-Computing		Prüfung (PR)	Dachsbacher

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

T**6.292 Course: Practical Course: Web Applications and Service-Oriented Architectures (II) [T-INFO-103121]****Responsible:** Prof. Dr. Sebastian Abeck**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-101635 - Practical Course: Web Applications and Service-Oriented Architectures \(II\)](#)

Type	Credits	Recurrence	Version
Examination of another type	5	Each summer term	3


Events					
SS 2020	24873	Practical Course: Web Applications and Service-Oriented Architectures (II)	2 SWS	Practical course (P)	Abeck, Schneider
Exams					
SS 2020	7500139	Practical Course: Web Applications and Service-Oriented Architectures (II)		Prüfung (PR)	Abeck




T

6.293 Course: Practical Introduction to Hardware Security [T-INFO-108920]

Responsible: Prof. Dr. Mehdi Baradaran Tahoori
Organisation: KIT Department of Informatics
Part of: [M-INFO-104357 - Practical Introduction to Hardware Security](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Each winter term	1

Events					
SS 2020	2400009	Practical Introduction in Hardware Security	4 SWS	Lecture / Practice (VÜ)	Tahoori
WS 20/21	2400033	Practical Introduction in Hardware Security	4 SWS	Lecture / Practice (VÜ) / 	Tahoori
Exams					
SS 2020	7500224	Practical Introduction to Hardware Security	Prüfung (PR)		Tahoori
WS 20/21	7500226	Practical Introduction to Hardware Security	Prüfung (PR)		Tahoori

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

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

V

Practical Introduction in Hardware Security

2400009, SS 2020, 4 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)

Content

4 SWS / 6 ECTS = 180h

Organizational issues

ab 23.04.2020 1x wöchentlich Donnerstag: Vorlesung von 14:00-15:30, im Anschluß Übung von 15:30-17:00

V

Practical Introduction in Hardware Security

2400033, WS 20/21, 4 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)
On-Site

Content

4 SWS / 6 ECTS = 180h

Organizational issues

ab 22.10.2020 1x wöchentlich Donnerstag: Vorlesung von 14:00-15:30, im Anschluß Übung von 15:30-17:00 Technologiefabrik, Geb. 07.21, Raum A.1.8


T**6.294 Course: Practical Project Robotics and Automation I (Software) [T-INFO-104545]**





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

Organisation: KIT Department of Informatics

Part of: [M-INFO-102224 - Practical Project Robotics and Automation I \(Software\)](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Each term	1

Events					
WS 20/21	24282	Project practical Robotics and Automation I (Software)	4 SWS	Practical course (P) /	 Hein, Längle
Exams					
SS 2020	750003	Project practical Robotics and Automation I (Software)		Prüfung (PR)	Hein, Längle

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


T**6.295 Course: Practical Project Robotics and Automation II (Hardware) [T-INFO-104552]**





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

Organisation: KIT Department of Informatics

Part of: [M-INFO-102230 - Practical Project Robotics and Automation II \(Hardware\)](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Each term	1

Events					
WS 20/21	24290	Robotics and Automation II (Hardware)	4 SWS	Practical course (P) /	 Hein, Längle
Exams					
SS 2020	750004	Project practical Robotics and Automation II (Hardware)		Prüfung (PR)	Hein, Längle

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

T

6.296 Course: Practical SAT Solving [T-INFO-105798]

Responsible: Prof. Dr. Carsten Sinz
Organisation: KIT Department of Informatics
Part of: [M-INFO-102825 - Practical SAT Solving](#)

Type
 Oral examination

Credits
 5

Recurrence
 Irregular

Version
 1


Events					
SS 2020	2400105	Practical SAT Solving	3 SWS	Lecture / Practice (VÜ)	Sinz, Balyo, Iser
Exams					
SS 2020	7500039	Practical SAT Solving		Prüfung (PR)	Sinz

T

6.297 Course: Practical Seminar Digital Service Systems [T-WIWI-106563]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-102808 - Digital Service Systems in Industry](#)

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

Events					
SS 2020	2540554	Practical Seminar: Information Systems & Service Design (Master)	3 SWS	Lecture (V)	Mädche
WS 20/21	2540554	Practical Seminar: Information Systems & Service Design	3 SWS	Lecture (V) / 	Mädche

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

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

New course title starting summer term 2017: "Practical Seminar Digital Service Systems".
 The current range of seminar topics is announced on the KSRI website www.ksri.kit.edu.

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

V

Practical Seminar: Information Systems & Service Design (Master)

Lecture (V)

2540554, SS 2020, 3 SWS, [Open in study portal](#)

Content

In this practical seminar, students get an individual assignment and develop a running software prototype. Beside the software prototype, the students also deliver a written documentation.

Prerequisites

Profound skills in software development are required

Literature

Further literature will be made available in the seminar.

V

Practical Seminar: Information Systems & Service Design

Lecture (V)
Online

2540554, WS 20/21, 3 SWS, Language: English, [Open in study portal](#)

T

6.298 Course: Practical Seminar: Advanced Analytics [T-WIWI-108765]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103118 - Data Science: Data-Driven User Modeling](#)

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

Competence Certificate

The assessment consists of practical work in the field of advanced analytics, 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

At least one module offered by the institute should have been chosen before attending this seminar.

Annotation

The course is held in English. The course is not offered regularly.

T**6.299 Course: Practical Seminar: Data-Driven Information Systems [T-WIWI-106207]**

Responsible: Prof. Dr. Alexander Mädche
 Prof. Dr. Gerhard Satzger
 Prof. Dr. Thomas Setzer
 Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-103117 - Data Science: Data-Driven Information Systems](#)

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

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

At least one module offered by the institute should have been chosen before attending this seminar.

Annotation

The course is held in english. The course is not offered regularly.

T

6.300 Course: Practical Seminar: Health Care Management (with Case Studies) [T-WIWI-102716]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-102805 - Service Operations](#)

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

Events					
SS 2020	2550498	Practical seminar: Health Care Management	3 SWS	Practical course (P)	Nickel, Mitarbeiter
Exams					
SS 2020	7900014	Practical Seminar: Health Care Management (with Case Studies)	Prüfung (PR)		Nickel

Competence Certificate

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

The assessment consists in a case study, the writing of a corresponding paper, and an oral exam (according to §4(2), 2 of the examination regulation).

Prerequisites

None.

Recommendation

Basic knowledge as conveyed in the module *Introduction to Operations Research* is assumed.

Annotation

The credits have been reduced to 4,5 starting summer term 2016.

The lecture is offered every term.

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

T

6.301 Course: Practical Seminar: Information Systems and Service Design [T-WIWI-108437]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-102806 - Service Innovation, Design & Engineering](#)
[M-WIWI-104068 - Information Systems in Organizations](#)
[M-WIWI-104080 - Designing Interactive Information Systems](#)

Type
Examination of another type

Credits
4,5

Recurrence
Each term

Version
2

Events					
SS 2020	2540554	Practical Seminar: Information Systems & Service Design (Master)	3 SWS	Lecture (V)	Mädche
Exams					
SS 2020	7900262	Practical Seminar: Information Systems and Service Design / Seminarpraktikum: Information Systems und Service Design		Prüfung (PR)	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.

Recommendation

Attending the course „Digital Service Design“ is recommended, but not mandatory.

Annotation

The course is held in English.

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

V

Practical Seminar: Information Systems & Service Design (Master)

2540554, SS 2020, 3 SWS, [Open in study portal](#)

Lecture (V)

Content

In this practical seminar, students get an individual assignment and develop a running software prototype. Beside the software prototype, the students also deliver a written documentation.

Prerequisites

Profound skills in software development are required

Literature

Further literature will be made available in the seminar.

T

6.302 Course: Practical Seminar: Service Innovation [T-WIWI-110887]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101410 - Business & Service Engineering](#)
[M-WIWI-102806 - Service Innovation, Design & Engineering](#)

Type	Credits	Recurrence	Version
Examination of another type	4,5	Irregular	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 (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

None

Recommendation

Knowledge of Service Innovation Methods is assumed. Therefore it is recommended to attend the course Service Innovation [2540468] beforehand.

Annotation

Due to the project work, the number of participants is limited and participation requires knowledge about models, concepts and approaches that are taught in the Service Innovation lecture. Having taken the Service Innovation lecture or demonstrating equivalent knowledge is a prerequisite for participating in this Practical Seminar. Details for registration will be announced on the web pages for this course.


The seminar is not offered regularly.





T

6.303 Course: Praktikum: Graphics and Game Development [T-INFO-110872]

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher
Organisation: KIT Department of Informatics
Part of: [M-INFO-105384 - Praktikum: Graphics and Game Development](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Irregular	1

Events					
SS 2020	24912	Praktikum Graphics and Game Development	4 SWS	Practical course (P)	Zeidan, Herveau, Tessari, Dachsbacher
WS 20/21	24287	Praktikum Graphics and Game Development	4 SWS	Practical course (P) / 	Zeidan, Tessari, Herveau, Dachsbacher
Exams					
SS 2020	7500135	Practical Course: Graphics and Game Development		Prüfung (PR)	Dachsbacher

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

Recommendation

Knowledge of basics or algorithms of computer graphics are recommended.

T**6.304 Course: Predictive Mechanism and Market Design [T-WIWI-102862]**

Responsible: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-101505 - Experimental Economics](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

Exams				
SS 2020	7900319	Predictive Mechanism and Market Design	Prüfung (PR)	Reiß

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Annotation

The course is given every second fall term, e.g., WS2017/18, WS2019/20, ...

The retake exam is given in the summer term subsequent to the fall term where the course (lecture and final exam) is given.

T

6.305 Course: Predictive Modeling [T-WIWI-110868]

Responsible: Jun.-Prof. Dr. Fabian Krüger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101638 - Econometrics and Statistics I](#)
[M-WIWI-101639 - Econometrics and Statistics II](#)

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

Events					
SS 2020	2521311	Predictive Modeling	2 SWS	Lecture (V)	Krüger
SS 2020	2521312	Predictive Modeling (Tutorial)	2 SWS	Practice (Ü)	Krüger
Exams					
SS 2020	7900298	Predictive Modeling		Prüfung (PR)	Krüger
SS 2020	7900299	Predictive Modeling		Prüfung (PR)	Krüger

Competence Certificate

Written assignment ("Take-Home Assignment") and oral examination (approx. 20 minutes, possibly via video conference) on the content of the assignment. Details will be announced in the lecture.

Prerequisites

None

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

V

Predictive Modeling

2521311, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Literature

- Elliott, G., und A. Timmermann (Hsg.): "Handbook of Economic Forecasting", vol. 2A und 2B, 2013.
- Gneiting, T., und M. Katzfuss: "Probabilistic Forecasting", Annual Review of Statistics and Its Application 1, 125-151, 2014.
- Hansen, B.E.: "Econometrics", Online-Text (<https://www.ssc.wisc.edu/~bhansen/econometrics>), 2020.
- Hastie, T., Tibshirani, R., and J. Friedman: "The Elements of Statistical Learning", 2. Ausgabe, Springer, 2009.
- Weitere Literatur wird in der Vorlesung bekanntgegeben.

V

Predictive Modeling (Tutorial)

2521312, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Practice (Ü)

T

6.306 Course: Price Management [T-WIWI-105946]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Dr Paul Glenn

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101409 - Electronic Markets](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2540529	Price Management	2 SWS	Lecture (V)	Glenn
SS 2020	2540530	Exercise Price Management	1 SWS	Practice (Ü)	Glenn
Exams					
SS 2020	7900139	Price Management		Prüfung (PR)	Geyer-Schulz

Competence Certificate

Lecture and exam will not be offered in summer semester 2019. The next examination is in the summer semester 2020.

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 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.

Prerequisites

None

Recommendation

None

Annotation

The lecture is offered for the first time in summer term 2016.

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

V

Price Management

2540529, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature

- H. Simon and M. Fassnacht, *Preismanagement*, vol. 4. Wiesbaden: Springer Gabler, 2016.
- T. T. Nagle, J. E. Hogan, und J. Zalee, *The Strategy and Tactics of Pricing: A guide to growing more profitably*. New Jersey: Prentice Hall, 2010.

T

6.307 Course: Price Negotiation and Sales Presentations [T-WIWI-102891]

Responsible: Prof. Dr. Martin Klarmann
Mark Schröder

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-105312 - Marketing and Sales Management](#)

Type	Credits	Recurrence	Version
Examination of another type	1,5	Each winter term	3

Competence Certificate

This alternative exam assessment consists of a presentation with a subsequent discussion totalling 25 minutes. Moreover learning contents are checked by realistic 30-minute price negotiations.

Prerequisites

None

Recommendation

None

Annotation

Please note that the workshop "Price Negotiation and Sales Presentations" as well as all other 1.5-ECTS courses will not take place in the winter term 20/21 due to a research semester. The course will probably be offered again starting in WS21/22.

Participation requires an application. The application period starts at the beginning of the semester. More information can be obtained on the website of the research group Marketing & Sales (marketing.iism.kit.edu). Access to this course is restricted. Typically all students will be granted the attendance of one course with 1.5 ECTS. Nevertheless attendance can not be guaranteed. For further information please contact Marketing and Sales Research Group (marketing.iism.kit.edu). Please note that only one of the courses from the election block can be attended in the module.

T**6.308 Course: Pricing [T-WIWI-102883]**

Responsible: Dr. Sven Feurer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101510 - Cross-Functional Management Accounting](#)
[M-WIWI-105312 - Marketing and Sales Management](#)

Type	Credits	Recurrence	Version
Written examination	4,5	see Annotations	1

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Recommendation


None





Annotation

Examination offer is discontinued. Last examination date 09.05.2020 for candidates with open retake exams and for first-time writers. For the latter, a repeat examination may be offered in case of a failed attempt (and only then) in SoSe 2020.

T

6.309 Course: Principles of Automatic Speech Recognition [T-INFO-101384]**Responsible:** Prof. Dr. Alexander Waibel**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100847 - Principles of Automatic Speech Recognition](#)**Type**
Oral examination**Credits**
6**Recurrence**
Each winter term**Version**
1

Events					
WS 20/21	24145	Grundlagen der Automatischen Spracherkennung	4 SWS	Lecture (V) / 	Waibel, Stüker
Exams					
SS 2020	7500042	Principles of Automatic Speech Recognition		Prüfung (PR)	Waibel, Stüker
WS 20/21	7500082	Principles of Automatic Speech Recognition		Prüfung (PR)	Waibel, Stüker

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

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

V

Grundlagen der Automatischen Spracherkennung24145, WS 20/21, 4 SWS, Language: German, [Open in study portal](#)**Lecture (V)**
Online**Content**

This class explains the layout of state-of-the-art speech recognition systems. The layout will be motivated based on the human speech production process und its properties. The class treats all processing steps of automatic speech recognition systems in detail: signal pre-processing, training of suitable, statistical models, and the actual recognition process. The focus will be on statistical methods, as they are being used in current speech recognition systems. In this way the state-of-the-art of the area of automatic speech recognition will be communicated. Further the class will introduce alternative Methods, which were the foundation of the current methods and which are still being used in special circumstances. Using sample applications und examples from current research projects, the current state-of-the-art and the performance of current systems will be illustrated.

Literature

- Xuedong Huang, Alex Acero, Hsiao-wuen Hon, Spoken Language Processing, Prentice Hall, NJ, USA, 2001
- Fredrick Jelinek (editor), Statistical Methods for Speech Recognition, The MIT Press, 1997, Cambridge, Massachusetts, London, England

Weiterführende Literatur

- Lawrence Rabiner and Ronald W. Schafer, Digital Processing of Speech Signals, Prentice Hall, 1978
- Schukat-Talamazzini, Automatische Spracherkennung

T

6.310 Course: Product and Innovation Management [T-WIWI-109864]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101510 - Cross-Functional Management Accounting](#)
[M-WIWI-101514 - Innovation Economics](#)
[M-WIWI-105312 - Marketing and Sales Management](#)

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	1

Events					
SS 2020	2571154	Product and Innovation Management	2 SWS	Lecture (V)	Feurer
Exams					
SS 2020	7900024	Product and Innovation Management		Prüfung (PR)	Klarmann
SS 2020	7900204	Product and Innovation Management		Prüfung (PR)	Klarmann

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Annotation

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

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

V

Product and Innovation Management

2571154, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

This course addresses topics around the management of new as well as existing products. After the foundations of product management, especially the product choice behavior of customers, students get to know in detail different steps of the innovation process. Another section regards the management of the existing product portfolio.

Students

- know the most important terms of the product and innovation concept
- understand the models of product choice behavior (e.g., the Markov model, the Luce model)
- are familiar with the basics of network theory (e.g. the Triadic Closure concept)
- know the central strategic concepts of innovation management (especially the market driving approach, pioneer and successor, Miles/Snow typology, blockbuster strategy)
- master the most important methods and sources of idea generation (e.g. open innovation, lead user method, crowdsourcing, creativity techniques, voice of the customer, innovation games, conjoint analysis, quality function deployment, online toolkits)
- are capable of defining and evaluating new product concepts and know the associated instruments like focus groups, product testing, speculative sales, test market simulation Assessor, electronic micro test market
- have advanced knowledge about market introduction (e.g. adoption and diffusion models Bass, Fourt/Woodlock, Mansfield)
- understand important connections of the innovation process (cluster formation, innovation culture, teams, stage-gate process)

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Total effort for 3 credit points: approx. 90 hours

Presence time: 30 hours

Preparation and wrap-up of LV: 45.0 hours

Exam and exam preparation: 15.0 hours

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

Literature

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

T

6.311 Course: Production and Logistics Management [T-WIWI-102632]

Responsible: Dr.-Ing. Simon Glöser-Chahoud
Prof. Dr. Frank Schultmann

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101412 - Industrial Production III](#)

Type	Credits	Recurrence	Version
Written examination	5,5	Each summer term	1

Events					
SS 2020	2581954	Production and Logistics Management	2 SWS	Lecture (V)	Schultmann, Glöser-Chahoud
SS 2020	2581955	Übung zu Produktions- und Logistikmanagement	2 SWS	Practice (Ü)	Zimmer, Huster
Exams					
SS 2020	7981954	Production and Logistics Management		Prüfung (PR)	Schultmann

Competence Certificate

The assessment consists of a written exam (90 minutes) (following § 4(2), 1 of the examination regulation). The exam takes place in every semester. Reexaminations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

None

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

V

Production and Logistics Management

2581954, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

This course covers central tasks and challenges of operative production and logistics management. Students get to know the set-up and mode of planning systems such as production planning and control systems, enterprise resource planning systems and advanced planning systems to cope with the accompanying planning tasks in supply chain management. Methods to solve these tasks from the field of operational research will be explored with respect to manufacturing program planning, material requirement planning, lot size problems and scheduling. Alongside to MRP II (Manufacturing Resources Planning), students will be introduced to integrated supply chain management approaches. Finally, commercially available planning systems will be presented and discussed.


Literature





Wird in der Veranstaltung bekannt gegeben.

T**6.312 Course: Project Lab Cognitive Automobiles and Robots [T-WIWI-109985]**

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103356 - Machine Learning](#)

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

Events					
SS 2020	2513500	Cognitive Automobiles and Robots	2 SWS	Seminar (S)	Zöllner
WS 20/21	2512501	Practical Course Cognitive Automobiles and Robots (Master)	3 SWS	Practical course (P) / 	Zöllner

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

Details of the grade formation will be announced at the beginning of the course.

Prerequisites

None

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

V**Cognitive Automobiles and Robots**

2513500, SS 2020, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)**Content**

The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

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

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

**Practical Course Cognitive Automobiles and Robots (Master)**2512501, WS 20/21, 3 SWS, Language: German/English, [Open in study portal](#)**Practical course (P)**
Online**Content**

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

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

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

Learning objectives:

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

Recommendations:

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

Workload:

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

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.



6.313 Course: Project Lab Machine Learning [T-WIWI-109983]

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103356 - Machine Learning](#)

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

Events					
SS 2020	2512500	Project Lab Machine Learning	3 SWS	Practical course (P)	Zöllner
Exams					
SS 2020	7900086	Project Lab Machine Learning		Prüfung (PR)	Zöllner

Competence Certificate

The alternative exam assessment consists of:

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

Details of the grade formation will be announced at the beginning of the course.

Prerequisites

None

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



Project Lab Machine Learning

2512500, SS 2020, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)

Content

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

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

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

Learning objectives:

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

Recommendations:

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

Workload:

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

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.


Registration and further information can be found in the WiWi-portal.


T

6.314 Course: Project Lab: Image Analysis and Fusion [T-INFO-104746]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: [M-INFO-102383 - Project Lab: Image Analysis and Fusion](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Each winter term	1

Events					
WS 20/21	24299	Project Lab: Image Analysis and Fusion	4 SWS	Practical course (P) / 	Beyerer
Exams					
WS 20/21	7500101	Project Lab: Image Analysis and Fusion		Prüfung (PR)	Beyerer

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

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

V

Project Lab: Image Analysis and Fusion

24299, WS 20/21, 4 SWS, [Open in study portal](#)

Practical course (P)
Blended (On-Site/Online)

Organizational issues

Die Erfolgskontrolle erfolgt durch Bewertung der Projektdokumentation sowie der Präsentation der Projektergebnisse als Erfolgskontrolle anderer Art nach § 4 Abs. 2 Nr. 3 der SPO.

Die Note setzt sich zusammen aus der Note der schriftlichen Ausarbeitung und den Präsentationen.

Literature**Empfehlungen:**

Hilfreich sind:



- Kenntnisse der Grundlagen der Stochastik und Signal- und Bildverarbeitung
- Kenntnisse der Vorlesungen Einführung in die Informationsfusion [IN4INEIF], Automatische Sichtprüfung und Bildverarbeitung [IN4INASB], Mustererkennung [IN4INME], Probabilistische Planung.





T

6.315 Course: Project Management [T-WIWI-103134]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101412 - Industrial Production III](#)
[M-WIWI-101471 - Industrial Production II](#)

Type	Credits	Recurrence	Version
Written examination	3,5	Each winter term	1

Events					
WS 20/21	2581963	Project Management	2 SWS	Lecture (V) / 	Schultmann, Volk, Wiens, Schumacher, Rosenberg, Wehrle
WS 20/21	2581964	Übung zu Project Management	1 SWS	Practice (Ü) / 	Volk, Wiens, Schumacher, Rosenberg, Wehrle, Gehring
Exams					
SS 2020	7981963	Project Management		Prüfung (PR)	Schultmann

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

Competence Certificate

The examination will be in form of a written exam acc. to §4(2), 1 ER. Exams are offered in every semester and can be re-examined at every ordinary examination date.

Prerequisites

None

Recommendation

None

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

V

Project Management

2581963, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

1. Introduction
2. Principles of Project Management
3. Project Scope Management
4. Time Management and Resource Scheduling
5. Cost Management
6. Quality Management
7. Risk Management
8. Stakeholder
9. Communication, Negotiation and Leadership
10. Project Controlling
11. Agile Project Management


Literature




Wird in der Veranstaltung bekannt gegeben.

T**6.316 Course: Public Management [T-WIWI-102740]**

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101504 - Collective Decision Making](#)
[M-WIWI-101511 - Advanced Topics in Public Finance](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2561127	Public Management	3 SWS	Lecture / Practice (VÜ) / 	Wigger
Exams					
SS 2020	790puma	Public Management		Prüfung (PR)	Wigger

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

Competence Certificate

The assessment consists of an 1h written exam following Art. 4, para. 2, clause 1 of the examination regulation. The grade for this course equals the grade of the written exam.

Prerequisites

None

Recommendation

Basic knowledge of Public Finance is required.

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

V**Public Management**

2561127, WS 20/21, 3 SWS, Language: German, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

Organizational issues

Dienstag 14:00-15:30 Uhr per Zoom-Livestream


Literature**Weiterführende Literatur:**





- Damkowski, W. und C. Precht (1995): Public Management; Kohlhammer
- Richter, R. und E.G. Furubotn (2003): Neue Institutionenökonomik; 3. Auflage, Mohr
- Schedler, K. und I. Proeller (2003): New Public Management; 2. Auflage; UTB
- Mueller, D.C. (2009): Public Choice III; Cambridge University Press
- Wigger, B.U. (2006): Grundzüge der Finanzwissenschaft; 2. Auflage; Springer

T**6.317 Course: Public Media Law [T-INFO-101311]**

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [M-INFO-101217 - Public Business Law](#)

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	1

Events					
WS 20/21	24082	Public Media Law	2 SWS	Lecture (V) / 	Eichenhofer
Exams					
SS 2020	7500058	Public Media Law		Prüfung (PR)	Dreier, Matz

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

T

6.318 Course: Public Revenues [T-WIWI-102739]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101511 - Advanced Topics in Public Finance](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2560120	Public Revenues	2 SWS	Lecture (V)	Wigger
SS 2020	2560121	Übung zu Öffentliche Einnahmen	1 SWS	Practice (Ü)	Wigger
Exams					
SS 2020	790oeff	Public Revenues		Prüfung (PR)	Wigger

Competence Certificate

The assessment consists of an 1h written exam following Art. 4, para. 2, clause 1 of the examination regulation. The grade for this course equals the grade of the written exam.

Prerequisites

None

Recommendation

Basic knowledge of Public Finance is required.

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

V

Public Revenues

2560120, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The *Public Revenues* lecture is concerned with the theory and policy of taxation and public dept. In the first chapter, fundamental concepts of taxation theory are introduced, whereas the second chapter deals with key elements of the German taxation system. The allocative and distributive effects of different taxation types are examined in chapter three and four. Chapter five integrates both allocative and distributive components in order to derive a theory of optimal taxation. The core of the sixth chapter is represented by international aspects of taxation. The debt part begins with a description of the extent and structure of public dept in chapter seven. In the following chapter, macroeconomic theories of national dept are evolved, while chapter nine is concerned with its long term consequences when employed as a regular instrument of budgeting. Finally, the tenth chapter deals with constitutional limits to public debt-incurring.

Learning goals:

See German version.

Workload:

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

Literature**Literatur:**

- Homburg, S.(2000): *Allgemeine Steuerlehre*, Vahlen
- Rosen, H.S.(1995): *Public Finance*; 4. Aufl., Irwin
- Wellisch, D.(2000): *Finanzwissenschaft I und Finanzwissenschaft III*, Vahlen
- Wigger, B. U.(2006): *Grundzüge der Finanzwissenschaft*; 2. Aufl., Springer

T**6.319 Course: Python for Computational Risk and Asset Management [T-WIWI-110213]**

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-105032 - Data Science for Finance](#)





Type
Examination of another type

Credits
4,5

Recurrence
Each winter term

Version
2

Events					
WS 20/21	2500016	Python for Computational Risk and Asset Management	2 SWS	Lecture (V) / 	Ulrich

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

Competence Certificate

The examination takes the form of an alternative exam assessment.

The alternative exam assessment consists of a Python-based "Takehome Exam". At the end of the third week of January, the student is given a "Takehome Exam" which he processes and sends back independently within 4 hours using Python. Precise instructions will be announced at the beginning of the course. The alternative exam assessment can be repeated a maximum of once. A timely repeat option takes place at the end of the third week in March of the same year. More detailed instructions will be given at the beginning of the course.

Prerequisites

None.

Recommendation

Good knowledge of statistics and basic programming skills

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

V**Python for Computational Risk and Asset Management**

2500016, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

The course covers several Python topics, among them:

- Automatic finance data extraction from the web
- Analyzing finance data
- Pattern recognition across asset markets
- Quant portfolio strategies to exploit patterns
- Modeling return densities using time-series and option methods
- Comparing strength and weakness of machine learning tools such as neural networks to financial econometric- and option-implied methods

T**6.320 Course: Quantitative Methods in Energy Economics [T-WIWI-107446]**



Responsible: Patrick Plötz
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101451 - Energy Economics and Energy Markets](#)





Type
Oral examination

Credits
3

Recurrence
Each winter term

Version
2

Events					
WS 20/21	2581007	Quantitative Methods in Energy Economics	2 SWS	Lecture (V) / 	Plötz, Dengiz, Yilmaz
WS 20/21	2581008	Übung zu Quantitative Methods in Energy Economics	1 SWS	Practice (Ü) / 	Dengiz, Yilmaz, Fichtner
Exams					
SS 2020	7981007	Quantitative Methods in Energy Economics		Prüfung (PR)	Fichtner

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

Competence Certificate

The assessment consists of a written exam (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

None

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

V**Quantitative Methods in Energy Economics**

2581007, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

Energy economics makes use of many quantitative methods in exploration and analysis of data as well as in simulations and modelling. This lecture course aims at introducing students of energy economics into the application of quantitative methods and techniques as taught in elementary courses to real problems in energy economics. The focus is mainly on regression, simulation, time series analysis and related statistical methods as applied in energy economics.

Learning Goals:

The student

- knows and understands selected quantitative methods of energy economics
- is able to use selected quantitative methods of energy economics
- understands they range of usage, limits and is autonomously able to adress new problems by them.

Literature

Wird in der Vorlesung bekannt gegeben.

T**6.321 Course: Randomized Algorithms [T-INFO-101331]**


Responsible: Thomas Worsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-100794 - Randomized Algorithms](#)





Type
Oral examination

Credits
5

Recurrence
Each winter term

Version
1

Events					
WS 20/21	24171	Randomized Algorithms	3 SWS	Lecture / Practice (VÜ) / 	Worsch
Exams					
SS 2020	75400002	Randomized Algorithms		Prüfung (PR)	Worsch

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

T**6.322 Course: Rationale Splines [T-INFO-103544]**

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101857 - Rationale Splines](#)

Type
Oral examination

Credits
3

Recurrence
Irregular

Version
2

T

6.323 Course: Rationale Splines [T-INFO-103543]


Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101853 - Rationale Splines](#)





Type
Oral examination

Credits
5

Recurrence
Irregular

Version
1

Events					
WS 20/21	2400032	Rational Splines	3 SWS	Lecture / Practice (VÜ) / 	Prautzsch

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

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

V

Rational Splines

2400032, WS 20/21, 3 SWS, Language: German, [Open in study portal](#)

Lecture / Practice (VÜ)
Blended (On-Site/Online)

Content

projective spaces, quadrics, rational curves, rational Bézier- and B-spline techniques, NURBS, dual curves, dual Bézier and B-spline representation, offset curves and surfaces, parametrizing quadrics, triangular patches on quadrics, cyclides

Organizational issues

Auf Wunsch oder wenn nötig, wird die Vorlesung online stattfinden.

T**6.324 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
Written examination

Credits
6

Recurrence
Each summer term

Version
1

Events					
SS 2020	24576	Real-Time Systems	4 SWS	Lecture / Practice (VÜ)	Längle, Ledermann
Exams					
SS 2020	750002	Real-Time Systems		Prüfung (PR)	Längle

T

6.325 Course: Recommender Systems [T-WIWI-102847]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101410 - Business & Service Engineering](#)
[M-WIWI-101470 - Data Science: Advanced CRM](#)
[M-WIWI-104814 - Information Systems: Analytical and Interactive Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2540506	Recommender Systems	2 SWS	Lecture (V)	Geyer-Schulz
SS 2020	2540507	Exercise Recommender Systems	1 SWS	Practice (Ü)	Nazemi
Exams					
SS 2020	7900138	Recommender Systems		Prüfung (PR)	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 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.

Prerequisites

None

Recommendation

None

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

V

Recommender Systems

2540506, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

At first, an overview of general aspects and concepts of recommender systems and its relevance for service providers and customers is given. Next, different categories of recommender systems are discussed. This includes explicit recommendations like customer reviews as well as implicit services based on behavioral data. Furthermore, the course gives a detailed view of the current research on recommender systems at the Chair of Information Services and Electronic Markets.

Learning objectives:

The student

- is proficient in different statistical, data-mining, and game theory methods of computing implicit and explicit recommendations
- evaluates recommender systems and compares these with related services

Workload:

The total workload for this course is approximately 135 hours (4.5 credits):

Time of attendance

- Attending the lecture: 15 x 90min = 22h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m
- Examination: 1h 00m

Self-study

- Preparation and wrap-up of the lecture: 15 x 180min = 45h 00m
- Preparing the exercises: 25h 00m
- Preparation of the examination: 31h 00m

Sum: 135h 00m

Exam:

Assessment consists of a written exam of 1 hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation.

The course is considered successfully taken, if at least 50 out of 100 points are acquired in the written exam. In this case, all additional points (up to 10) from exercise work will be added.

Grade: Minimum points

- 1,0: 95
- 1,3: 90
- 1,7: 85
- 2,0: 80
- 2,3: 75
- 2,7: 70
- 3,0: 65
- 3,3: 60
- 3,7: 55
- 4,0: 50
- 5,0: 0

Literature

Rakesh Agrawal, Tomasz Imielinski, and Arun Swami. Mining association rules between sets of items in large databases. In Sushil Jajodia Peter Buneman, editor, Proceedings of the ACM SIGMOD International Conference on Management of Data, volume 22, Washington, D.C., USA, Jun 1993. ACM, ACM Press.

Rakesh Agrawal and Ramakrishnan Srikant. Fast algorithms for mining association rules. In Proceedings of the 20th Very Large Databases Conference, Santiago, Chile, pages 487 – 499, Sep 1994.

Asim Ansari, Skander Essegaier, and Rajeev Kohli. Internet recommendation systems. *Journal of Marketing Research*, 37:363 – 375, Aug 2000.

Christopher Avery, Paul Resnick, and Richard Zweckhauser. The market for evaluations. *American Economic Review*, 89(3):564 – 584, 1999.

Ibrahim Cingil, Asuman Dogac, and Ayca Azgin. A Broader Approach to Personalization. *Communications of the ACM*, 43(8):136 – 141, Aug 2000.

Richard O. Duda, Peter E. Hart, and David G. Stork. *Pattern Classification*. Wiley-Interscience, New York, 2 edition, 2001.

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. A customer purchase incidence model applied to recommender services. In R. Kohavi et al., editor, Proceedings of the WebKDD 2001 – Mining log data across all customer touchpoints, volume 2356 of Lecture Notes in Artificial Intelligence LNAI, pages 25–47, Berlin, 2002. ACM, Springer-Verlag.

Jon M. Kleinberg. Authoritative sources in a hyperlinked environment. *JACM*, 46(5):604–632, sep 1999.

Joseph Konstan, Bradley Miller, David Maltz, Jonathan Herlocker, Lee Gordon, and John Riedl. Grouplens: Applying Collaborative Filtering to Usenet News. *Communications of the ACM*, 40(3):77 – 87, Mar 1997.

Paul Resnick, Neophytos Iacovou, Peter Bergstrom, and John Riedl. Grouplens: An open architecture for collaborative filtering of netnews. In Proceedings of the conference on Computer supported cooperative work, pages 175 – 186. ACM Press, 1994.

Weiterführende Literatur:

Antoinette Alexander. The return of hardware: A necessary evil? *Accounting Technology*, 15(8):46 – 49, Sep 1999.

Christopher Avery and Richard Zeckhauser. Recommender systems for evaluating computer messages. *Communications of the ACM*, 40(3):88 – 89, Mar 1997.

Steven Bellman, Gerald Lohse, and Eric Johnson. Predictors of Online Buying Behavior. *Communications of the ACM*, 42(12):32 – 38, Dec 1999.

Thomas J. Blischok. Every transaction tells a story. *Chain Store Age Executive with Shopping Center Age*, 71(3):50–56, Mar 1995.

Hans Hermann Bock. *Automatische Klassifikation*. Vandenhoeck und Ruprecht, Göttingen, 1974.

Andrew S.C. Ehrenberg. *Repeat-Buying: Facts, Theory and Applications*. Charles Griffin & Company Ltd, London, 2 edition, 1988.

Wolfgang Gaul, Andreas Geyer-Schulz, Michael Hahsler, and Lars Schmidt-Thieme. eMarketing mittels Recommendersystemen. *Marketing ZFP*, 24:47 – 55, 2002.

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. myvu: a next generation recommender system based on observed consumer behavior and interactive evolutionary algorithms. In W. Gaul, O. Opitz, and M. Schader, editors, *Data Analysis – Scientific Modeling and Practical Applications*, volume 18 of Studies in Classification, Data Analysis and Knowledge Organization, pages 447 – 457, Heidelberg, Germany, 2000. Springer.

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. Educational and scientific recommender systems: Designing the information channels of the virtual university. *International Journal of Engineering Education*, 17(2):153 – 163, 2001.

Mark-Edward Grey. *Recommendersysteme auf Basis linearer Regression*, 2004.

John A. Hartigan. *Clustering Algorithms*. John Wiley and Sons, New York, 1975.

Kevin Kelly. *New Rules for the New Economy: 10 Radical Strategies for a Connected World*. Viking, 1998.

Taek-Hun Kim, Young-Suk Ryu, Seok-In Park, and Sung-Bong Yang. An improved recommendation algorithm in collaborative filtering. In K. Bauknecht, A. Min Tjoa, and G. Quirchmayr, editors, *E-Commerce and Web Technologies, Third International Conference, Aix-en-Provence, France*, volume 2455 of Lecture Notes in Computer Science, pages 254–261, Berlin, Sep 2002. Springer-Verlag.

Ron Kohavi, Brij Masand, Myra Spiliopoulou, and Jaideep Srivastava. Web mining. *Data Mining and Knowledge Discovery*, 6:5 – 8, 2002.

G. S. Maddala. *Introduction to Econometrics*. John Wiley, Chichester, 3 edition, 2001.

Andreas Mild and Martin Natter. Collaborative filtering or regression models for Internet recommendation systems? *Journal of Targeting, Measurement and Analysis for Marketing*, 10(4):304 – 313, Jan 2002.

Andreas Mild and Thomas Reutterer. An improved collaborative filtering approach for predicting cross-category purchases based on binary market basket data. *Journal of Retailing & Consumer Services*, 10(3):123–133, may 2003.

Paul Resnick and Hal R. Varian. Recommender Systems. *Communications of the ACM*, 40(3):56 – 58, Mar 1997.

Badrul M. Sarwar, Joseph A. Konstan, Al Borchers, Jon Herlocker, Brad Miller, and John Riedl. Using filtering agents to improve prediction quality in the grouplens research collaborative filtering system. In Proceedings of ACM Conference on Computer-Supported Cooperative Work, Social Filtering, Social Influences, pages 345 – 354, New York, 1998. ACM Press.

J. Ben Schafer, Joseph Konstan, and Jon Riedl. Recommender Systems in E-commerce. In Proceedings of the 1st ACM conference on Electronic commerce, pages 158 – 166, Denver, Colorado, USA, Nov 1999. ACM.

Upendra Shardanand and Patti Maes. Social information filtering: Algorithms for automating "word of mouth". In Proceedings of ACM SIGCHI, volume 1 of Papers: Using the Information of Others, pages 210 – 217. ACM, 1995.

T**6.326 Course: Reconfigurable and Adaptive Systems [T-INFO-101258]**

Responsible: Prof. Dr.-Ing. Jörg Henkel
Organisation: KIT Department of Informatics
Part of: [M-INFO-100721 - Reconfigurable and Adaptive Systems](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	1

Events					
SS 2020	2424662	Rekonfigurierbare und Adaptive Systeme	2 SWS	Lecture (V)	Bauer, Henkel
Exams					
SS 2020	7500201	VL: Reconfigurable and Adaptive Systems	Prüfung (PR)		Henkel
WS 20/21	7500154	VL: Reconfigurable and Adaptive Systems	Prüfung (PR)		Henkel

T

6.327 Course: Regulation Theory and Practice [T-WIWI-102712]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101406 - Network Economics](#)
[M-WIWI-101451 - Energy Economics and Energy Markets](#)

Type	Credits	Recurrence	Version
Oral examination	4,5	see Annotations	2

Competence Certificate

The lecture is not offered for an indefinite period of time.

Result of success is made by a 20-30 minutes oral examination. Examination is offered every semester and can be retried at any regular examination date.

Prerequisites

None

Recommendation

Basic knowledge and skills of microeconomics from undergraduate studies (bachelor's degree) are expected.

Particularly helpful but not necessary: Industrial Economics and Principal-Agent- or Contract theories. Prior attendance of the lecture *Competition in Networks* [26240] is helpful in any case but not considered a formal precondition.

Annotation

The lecture is not offered for an indefinite period of time.

T**6.328 Course: Reinforcement Learning and Neural Networks in Robotics [T-INFO-109928]****Responsible:** Dr.-Ing. Pascal Meißner**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-104894 - Reinforcement Learning and Neural Networks in Robotics](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	2

T

6.329 Course: Reliable Computing I [T-INFO-101387]


Responsible: Prof. Dr. Mehdi Baradaran Tahoori
Organisation: KIT Department of Informatics
Part of: [M-INFO-100850 - Reliable Computing I](#)





Type
Oral examination

Credits
3

Recurrence
Each winter term

Version
1

Events					
WS 20/21	24071	Reliable Computing I	2 SWS	Lecture (V) / 	Tahoori
Exams					
SS 2020	7500027	Reliable Computing I		Prüfung (PR)	Tahoori
WS 20/21	7500167	Reliable Computing I		Prüfung (PR)	Tahoori

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

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

V

Reliable Computing I

24071, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

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

T

6.330 Course: Requirements Engineering [T-INFO-101300]

Responsible: Prof. Dr.-Ing. Anne Koziolk
Organisation: KIT Department of Informatics
Part of: [M-INFO-100763 - Requirements Engineering](#)
[M-WIWI-104812 - Information Systems: Engineering and Transformation](#)

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	2

Events					
SS 2020	2400050	Requirements Engineering	2 SWS	Lecture (V)	Koziolk, Werle
Exams					
SS 2020	7500059	Requirements Engineering		Prüfung (PR)	Koziolk
SS 2020	7500295	Requirements Engineering Second Exam VL 2400050		Prüfung (PR)	Koziolk

Recommendation

Das Modul Softwaretechnik II wird empfohlen.

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

V

Requirements Engineering

2400050, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

General remarks: The lecture is held in English and all lecture material is in English. The lecture will be recorded and the recordings will be made available on the Ilias platform.

Literature

Die Vorlesung basiert auf Folien und Arbeiten von Martin Glinz, daher ist kein direkt begleitendes Buch verfügbar. Abweichungen zwischen in der Vorlesung besprochenen Inhalten und von den Teilnehmern gelesenen Quellen dürfen gern im Kurs diskutiert werden.

Hauptthinweis: Pohl, K. (2007). Requirements Engineering: Grundlagen, Prinzipien, Techniken. dpunkt. verlag. (in Bibliothek verfügbar)

Weitere Literaturhinweise

- I. Alexander, R. Stevens (2002). Writing Better Requirements. London: Addison-Wesley.
- A. Davis (2005). Just Enough Requirements Management. New York: Dorset House.
- D.C. Gause, G.M. Weinberg (1989). Exploring Requirements: Quality before Design. New York: Dorset House.
- M. Glinz (2013). A Glossary of Requirements Engineering Terminology, Version 1.5. International Requirements Engineering Board (IREB). Originally published in 2011. Available at <http://www.ireb.org> (check-out CPRE Glossary)
- E. Gottesdiener (2002). Requirements by Collaboration: Workshops for Defining Needs. Boston: Addison-Wesley.
- M.A. Jackson (1995). Software Requirements and Specifications: A Lexicon of Practice, Principles and Prejudices. Addison-Wesley (ACM Press books): Wokingham, etc.
- A. van Lamsweerde (2009). Requirements Engineering: From System Goals to UML Models to Software Specifications. Chichester: John Wiley & Sons.
- S. Robertson, J. Robertson (2006). Mastering the Requirements Process. 2nd edition. Boston: Addison-Wesley.
- K. Wiegers (2006). More About Software Requirements: Thorny Issues and Practical Advice. Redmond: Microsoft Press.

T

6.331 Course: Research Project (Project, 1st Semester) - Oral Exam [T-INFO-110218]


Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: [M-INFO-105037 - Research Project \(Project, 1st Semester\)](#)





Type
Oral examination

Credits
3

Recurrence
Each term

Version
2

Events					
SS 2020	2400047	Research Project (Project, first semester)	SWS		Beckert, Beigl, Reussner, Kirsten
WS 20/21	2400068	Research Project (Project, first semester)	SWS	/ 	Beckert, Beigl, Reussner, Kirsten
Exams					
SS 2020	7500114	Team Project (Project, 1st Semester) - Oral Exam	Prüfung (PR)		Beckert, Beigl, Reussner
WS 20/21	7500079	Research Project (Project, 1st Semester) - Oral Exam	Prüfung (PR)		Beckert, Beigl, Reussner

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


T**6.332 Course: Research Project (Project, 1st Semester) - Presentation [T-INFO-110219]****Responsible:** Prof. Dr. Bernhard Beckert**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-105037 - Research Project \(Project, 1st Semester\)](#)





Type
Examination of another type

Credits
3

Recurrence
Each term

Version
1

Events					
SS 2020	2400047	Research Project (Project, first semester)	SWS		Beckert, Beigl, Reussner, Kirsten
WS 20/21	2400068	Research Project (Project, first semester)	SWS	/ 	Beckert, Beigl, Reussner, Kirsten
Exams					
SS 2020	7500130	Team Project (Project, 1st Semester) - Presentation	Prüfung (PR)		Beckert, Beigl, Reussner
WS 20/21	7500080	Research Project (Project, 1st Semester) - Presentation	Prüfung (PR)		Beckert, Beigl, Reussner

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


T**6.333 Course: Research Project (Project, 1st Semester) - Project Proposal [T-INFO-110220]****Responsible:** Prof. Dr. Bernhard Beckert**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-105037 - Research Project \(Project, 1st Semester\)](#)





Type
Examination of another type

Credits
4


Recurrence
Each term





Version
1

Events					
SS 2020	2400047	Research Project (Project, first semester)	SWS		Beckert, Beigl, Reussner, Kirsten
WS 20/21	2400068	Research Project (Project, first semester)	SWS	/ 	Beckert, Beigl, Reussner, Kirsten
Exams					
SS 2020	7500131	Team Project (Project, 1st Semester) - Project Proposal	Prüfung (PR)		Beckert, Beigl, Reussner
WS 20/21	7500081	Research Project (Project, 1st Semester) - Written Exam	Prüfung (PR)		Beckert, Beigl, Reussner

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

T**6.334 Course: Research Project (Project, 2nd Semester) - Oral Exam [T-INFO-110221]****Responsible:** Prof. Dr. Bernhard Beckert**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-105038 - Research Project \(Project, 2nd Semester\)](#)**Type**
Oral examination**Credits**
3**Recurrence**
Each term**Version**
2

Events					
SS 2020	2400053	Research Project (Project, second semester)	SWS		Beckert, Beigl, Reussner, Kirsten
WS 20/21	2400070	Research Project (Project, second semester)	SWS	/ 	Beckert, Beigl, Reussner, Kirsten
Exams					
SS 2020	7500126	Team Project (Project, 2nd Semester) - Oral Exam	Prüfung (PR)		Beckert, Beigl, Reussner
WS 20/21	7500171	Research Project (Project, 2nd Semester) - Oral Exam	Prüfung (PR)		Beckert, Beigl, Reussner

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


T**6.335 Course: Research Project (Project, 2nd Semester) - Presentation [T-INFO-110222]****Responsible:** Prof. Dr. Bernhard Beckert**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-105038 - Research Project \(Project, 2nd Semester\)](#)





Type
Examination of another type

Credits
3


Recurrence
Each term





Version
1

Events					
SS 2020	2400053	Research Project (Project, second semester)	SWS		Beckert, Beigl, Reussner, Kirsten
WS 20/21	2400070	Research Project (Project, second semester)	SWS	/ 	Beckert, Beigl, Reussner, Kirsten
Exams					
SS 2020	7500132	Team Project (Project, 2nd Semester) - Presentation	Prüfung (PR)		Beckert, Beigl, Reussner
WS 20/21	7500077	Research Project (Project, 2nd Semester) - Presentation	Prüfung (PR)		Beckert, Beigl, Reussner

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

T**6.336 Course: Research Project (Project, 2nd Semester) - Scientific Report [T-INFO-110223]****Responsible:** Prof. Dr. Bernhard Beckert**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-105038 - Research Project \(Project, 2nd Semester\)](#)**Type**
Examination of another type**Credits**
4**Recurrence**
Each term**Version**
1

Events					
SS 2020	2400053	Research Project (Project, second semester)	SWS		Beckert, Beigl, Reussner, Kirsten
WS 20/21	2400070	Research Project (Project, second semester)	SWS	/ 	Beckert, Beigl, Reussner, Kirsten
Exams					
SS 2020	7500133	Team Project (Project, 2nd Semester) - Scientific Report	Prüfung (PR)		Beckert, Beigl, Reussner
WS 20/21	7500078	Research Project (Project, 2nd Semester) - Written Exam	Prüfung (PR)		Beckert, Beigl, Reussner

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

T



6.337 Course: Risk Management in Industrial Supply Networks [T-WIWI-102826]

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

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101412 - Industrial Production III](#)
[M-WIWI-101471 - Industrial Production II](#)

Type	Credits	Recurrence	Version
Written examination	3,5	Each winter term	1

Events					
WS 20/21	2581992	Risk Management in Industrial Supply Networks	2 SWS	Lecture (V) / 	Wiens
WS 20/21	2581993	Übung zu Risk Management in Industrial Supply Networks	1 SWS	Practice (Ü) / 	Klein, Wiens
Exams					
SS 2020	7981992	Risk Management in Industrial Supply Networks		Prüfung (PR)	Schultmann

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

Competence Certificate

The assessment consists of an oral (30 minutes) or a written (60 minutes) exam (following § 4(2), 1 of the examination regulation). The exam takes place in every semester. Reexaminations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

None

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

V

Risk Management in Industrial Supply Networks

2581992, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

Students learn methods and tools to manage risks in complex and dynamically evolving supply chain networks. Students learn the key terms and concepts of risk management and decision theory, in particular expected utility theory. Based on the theoretic prerequisites, students are able to determine and analyze risk diversification, risk pooling, insurance mechanisms and get an overview on statistical risk measures and real options. These approaches are adapted to analyze supply chain risks in a network context. In this manner, students gain knowledge in basic notions of network theory, network metrics and network-strategies for supply chain decisions.

- Introduction
- Risks in decisions under uncertainty: Expected Utility Theory & risk preferences
- The newsvendor model; multivariate risks and insurance
- Risk measures & evaluation techniques: Value-at-Risk, Conditional Value at Risk, Monte Carlo and Real Options
- Transparency in complex supply chains
- Network risk: network basics and criticality
- Risk in supply networks: empirical approaches and insights

Literature

Wird in der Veranstaltung bekannt gegeben.

T

6.338 Course: Roadmapping [T-WIWI-102853]

Responsible: Dr. Daniel Jeffrey Koch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each summer term	1

Events					
SS 2020	2545102	Technology Assessment	2 SWS	Seminar (S)	Koch

Competence Certificate

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO).

Prerequisites

None

Recommendation

Prior attendance of the course Innovation Management is recommended.

Annotation

See German version.

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

V

Technology Assessment

2545102, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content

Technology Assessment can play a role at different points in the innovation process and can be considered as decision support for or against certain technological options. The seminar Technology Assessment will focus on the early phase "fuzzy front end" in innovation management. The technology assessment will take place here under a high degree of uncertainty regarding future technological developments. The evaluation of technologies can be done with methods such as Technology Readiness, Technology Lifecycle Analysis, Portfolio Analysis, etc.. The early evaluation of technologies is particularly important against the background of limited resources in companies and uncertainty about future developments.

T**6.339 Course: Robotics - Practical Course [T-INFO-105107]**

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: [M-INFO-102522 - Robotics - Practical Course](#)

Type	Credits	Recurrence	Version
Examination of another type	6	Each summer term	2

Events					
SS 2020	24870	Robotics - Practical Course	4 SWS	Practical course (P)	Asfour
Exams					
SS 2020	7500261	Robotics - Practical Course		Prüfung (PR)	Asfour

Recommendation

Should have attended the lectures Robotics I - III, and Mechano-Informatics and Robotics.

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

V**Robotics - Practical Course**


24870, SS 2020, 4 SWS, Language: German, [Open in study portal](#)





Practical course (P)

T**6.340 Course: Robotics I - Introduction to Robotics [T-INFO-108014]**

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: [M-INFO-100893 - Robotics I - Introduction to Robotics](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 20/21	2424152	Robotics I - Introduction to Robotics	3/1 SWS	Lecture (V) / 	Asfour
Exams					
SS 2020	7500218	Robotik I - Einführung in die Robotik	Prüfung (PR)		Asfour
WS 20/21	7500106	Robotics I - Introduction to Robotics	Prüfung (PR)		Asfour

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

T

6.341 Course: Robotics II: Humanoid Robotics [T-INFO-105723]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: [M-INFO-102756 - Robotics II: Humanoid Robotics](#)

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	4

Events					
SS 2020	2400074	Robotics II: Humanoid Robotics	2 SWS	Lecture (V)	Asfour
Exams					
SS 2020	7500086	Robotics II: Humanoid Robotics		Prüfung (PR)	Asfour
WS 20/21	7500211	Robotics II: Humanoid Robotics		Prüfung (PR)	Asfour

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

V

Robotics II: Humanoid Robotics

2400074, SS 2020, 2 SWS, Language: German/English, [Open in study portal](#)

Lecture (V)

Content

The lecture presents current work in the field of humanoid robotics that deals with the implementation of complex sensorimotor and cognitive abilities. In the individual topics different methods and algorithms, their advantages and disadvantages, as well as the current state of research are discussed.

The topics addressed are: biomechanical models of the human body, biologically inspired and data-driven methods of grasping, active perception, imitation learning and programming by demonstration as well as semantic representations of sensorimotor experience

Learning Objectives:

The students have an overview of current research topics in autonomous learning robot systems using the example of humanoid robotics. They are able to classify and evaluate current developments in the field of cognitive humanoid robotics.

The students know the essential problems of humanoid robotics and are able to develop solutions on the basis of existing research.

Organizational issues

Die Erfolgskontrolle erfolgt in Form einer schriftlichen Prüfung im Umfang von i.d.R. 60 Minuten nach § 4 Abs. 2 Nr. 1 SPO.

Arbeitsaufwand: 90 h

Voraussetzungen: Der Besuch der Vorlesungen *Robotik I – Einführung in die Robotik* und *Mechano-Informatik in der Robotik* wird vorausgesetzt

Zielgruppe: **Modul für Master Maschinenbau, Mechatronik und Informationstechnik, Elektrotechnik und Informationstechnik**

Literature**Weiterführende Literatur**

Wissenschaftliche Veröffentlichungen zum Thema, werden auf der VL-Website bereitgestellt.



6.342 Course: Robotics III - Sensors and Perception in Robotics [T-INFO-109931]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: [M-INFO-104897 - Robotics III - Sensors and Perception in Robotics](#)

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	2

Events					
SS 2020	2400067	Robotics III - Sensors and Perception in Robotics	2 SWS	Lecture (V)	Asfour
Exams					
SS 2020	7500242	Robotics III - Sensors and Perception in Robotics		Prüfung (PR)	Asfour
WS 20/21	7500207	Robotics III - Sensors and Perception in Robotics		Prüfung (PR)	Asfour

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



Robotics III - Sensors and Perception in Robotics

2400067, SS 2020, 2 SWS, Language: German/English, [Open in study portal](#)

Lecture (V)

Content

The lecture supplements the lecture Robotics I with a broad overview of sensors used in robotics. The lecture focuses on visual perception, object recognition, simultaneous localization and mapping (SLAM) and semantic scene interpretation. The lecture is divided into two parts:

In the first part a comprehensive overview of current sensor technologies is given. A basic distinction is made between sensors for the perception of the environment (exteroceptive) and sensors for the perception of the internal state (proprioceptive).

The second part of the lecture concentrates on the use of exteroceptive sensors in robotics. The topics covered include tactile exploration and visual data processing, including advanced topics such as feature extraction, object localization, simultaneous localization and mapping (SLAM) and semantic scene interpretation.

Learning Objectives:

Students know the main sensor principles used in robotics and understand the data flow from physical measurement through digitization to the use of the recorded data for feature extraction, state estimation and environmental modeling.

Students are able to propose and justify suitable sensor concepts for common tasks in robotics.

Organizational issues

Die Erfolgskontrolle erfolgt in Form einer schriftlichen Prüfung im Umfang von i.d.R. 60 Minuten nach § 4 Abs. 2 Nr. 1 SPO.

Modul für Master Maschinenbau, Mechatronik und Informationstechnik, Elektrotechnik und Informationstechnik

Voraussetzungen: **Der Besuch der Vorlesung Robotik I – Einführung in die Robotik wird vorausgesetzt**

Zielgruppe: Die Vorlesung richtet sich an Studierende der Informatik, der Elektrotechnik und des Maschinenbaus sowie an alle Interessenten an der Robotik.

Arbeitsaufwand: 90 h

Literature

Eine Foliensammlung wird im Laufe der Vorlesung angeboten.

Begleitende Literatur wird zu den einzelnen Themen in der Vorlesung bekannt gegeben.

T

6.343 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
Written examination

Credits
6

Recurrence
Each summer term

Version
1

Events					
SS 2020	24941	Security	3 SWS	Lecture (V)	Müller-Quade, Strufe
Exams					
SS 2020	7500331	Security		Prüfung (PR)	Müller-Quade
SS 2020	7524941	Security		Prüfung (PR)	Müller-Quade, Strufe

T

6.344 Course: Selected Issues in Critical Information Infrastructures [T-WIWI-109251]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104403 - Critical Digital Infrastructures](#)

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

Events					
SS 2020	2512403	Praktikum Blockchain und Distributed Ledger Technology (Master)	SWS	Practical course (P)	Sunyaev, Beyene, Kannengießer, Pandl
WS 20/21	2512403	Practical Course Blockchain Hackathon (Master)	SWS	Practical course (P) / SWS	Sunyaev, Kannengießer
Exams					
SS 2020	7900172	Lab Blockchain and Distributed Ledger Technology (Master)		Prüfung (PR)	Sunyaev

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

Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO). Details will be announced in the respective course.

Prerequisites

None.

Annotation

T-WIWI-109251 "Selected Issues in Critical Information Infrastructures" serves to credit an extracurricular course in the module "Critical Digital Infrastructures".

T**6.345 Course: Selected Legal Issues of Internet Law [T-INFO-108462]**

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [M-INFO-101215 - Intellectual Property Law](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each summer term	1

Events					
SS 2020	24821	Selected legal issues of Internet law	2 SWS	Colloquium (KOL)	Dreier
Exams					
SS 2020	7500226	Selected legal issues of Internet law		Prüfung (PR)	Dreier

T

6.346 Course: Semantic Web Technologies [T-WIWI-110848]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101455 - Web Data Management](#)
[M-WIWI-105366 - Artificial Intelligence](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2511310	Semantic Web Technologies	2 SWS	Lecture (V)	Sure-Vetter, Acosta Deibe, Käfer
SS 2020	2511311	Exercises to Semantic Web Technologies	1 SWS	Practice (Ü)	Sure-Vetter, Acosta Deibe, Käfer
Exams					
SS 2020	7900028	Semantic Web Technologies (Registration until 13 July 2020)		Prüfung (PR)	Sure-Vetter

Competence Certificate

The assessment consists of an 1h written exam following §4, Abs. 2, 1 of the examination regulation or of an oral exam (20 min) following §4, Abs. 2, 2 of the examination regulation.

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

Prerequisites

None

Recommendation

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required.

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

V

Semantic Web Technologies

2511310, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

The aim of the Semantic Web is to make the meaning (semantics) of data on the web usable in intelligent systems, e.g. in e-commerce and internet portals

Central concepts are the representation of knowledge in form of RDF and ontologies, the access via Linked Data, as well as querying the data by using SPARQL. This lecture provides the foundations of knowledge representation and processing for the corresponding technologies and presents example applications.

The following topics are covered:

- Resource Description Framework (RDF) and RDF Schema (RDFS)
- Web Architecture and Linked Data
- Web Ontology Language (OWL)
- Query language SPARQL
- Rule languages
- Applications

Learning objectives:

The student

- understands the motivation and foundational ideas behind Semantic Web and Linked Data technologies, and is able to analyse and realise systems
- demonstrates basic competency in the areas of data and system integration on the web
- masters advanced knowledge representation scenarios involving ontologies

Recommendations:

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required. Knowledge of modeling with UML is required.

Workload:

- The total workload for this course is approximately 135 hours
- Time of presentness: 45 hours
- Time of preparation and postprocessing: 60 hours
- Exam and exam preparation: 30 hours

Literature

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web – Grundlagen. Springer, 2008.
- John Domingue, Dieter Fensel, James A. Hendler (Editors). Handbook of Semantic Web Technologies. Springer, 2011.

Weitere Literatur

- S. Staab, R. Studer (Editors). Handbook on Ontologies. International Handbooks in Information Systems. Springer, 2003.
- Tim Berners-Lee. Weaving the Web. Harper, 1999 geb. 2000 Taschenbuch.
- Ian Jacobs, Norman Walsh. Architecture of the World Wide Web, Volume One. W3C Recommendation 15 December 2004. <http://www.w3.org/TR/webarch/>
- Dean Allemang. Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL. Morgan Kaufmann, 2008.
- Tom Heath and Chris Bizer. Linked Data: Evolving the Web into a Global Data Space. Synthesis Lectures on the Semantic Web: Theory and Technology, 2011.

**Exercises to Semantic Web Technologies**

2511311, SS 2020, 1 SWS, Language: English, [Open in study portal](#)

Practice (Ü)

Content

The exercises are related to the lecture Semantic Web Technologies.

Multiple exercises are held that capture the topics, held in the lecture Semantic Web Technologies, and discuss them in detail. Thereby, practical examples are given to the students in order to transfer theoretical aspects into practical implementation.

The following topics are covered:

- Resource Description Framework (RDF) and RDF Schema (RDFS)
- Web Architecture and Linked Data
- Web Ontology Language (OWL)
- Query language SPARQL
- Rule languages
- Applications

Learning objectives:

The student

- understands the motivation and foundational ideas behind Semantic Web and Linked Data technologies, and is able to analyse and realise systems
- demonstrates basic competency in the areas of data and system integration on the web
- masters advanced knowledge representation scenarios involving ontologies

Recommendations:

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required. Knowledge of modeling with UML is required.

Literature

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web – Grundlagen. Springer, 2008.
- John Domingue, Dieter Fensel, James A. Hendler (Editors). Handbook of Semantic Web Technologies. Springer, 2011.

Weitere Literatur

- S. Staab, R. Studer (Editors). Handbook on Ontologies. International Handbooks in Information Systems. Springer, 2003.
- Tim Berners-Lee. Weaving the Web. Harper, 1999 geb. 2000 Taschenbuch.
- Ian Jacobs, Norman Walsh. Architecture of the World Wide Web, Volume One. W3C Recommendation 15 December 2004. <http://www.w3.org/TR/webarch/>
- Dean Allemang. Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL. Morgan Kaufmann, 2008.
- Tom Heath and Chris Bizer. Linked Data: Evolving the Web into a Global Data Space. Synthesis Lectures on the Semantic Web: Theory and Technology, 2011.

T



6.347 Course: Seminar in Business Administration A (Master) [T-WIWI-103474]















Responsible: Professorenschaft des Fachbereichs Betriebswirtschaftslehre

Organisation: KIT Department of Economics and Management





Part of: M-WIWI-102736 - Seminar Module Economic Sciences

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2020	2400121	Interactive Analytics Seminar	2 SWS		Beigl, Mädche, Pescara
SS 2020	2500006	Seminar Human Resource Management (Master)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
SS 2020	2500007	Seminar Human Resources and Organizations (Master)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
SS 2020	2530372	Advances in Financial Machine Learning	2 SWS	Seminar (S)	Ulrich
SS 2020	2530580	Seminar in Finance	2 SWS	Seminar (S)	Uhrig-Homburg, Eska, Schuster, Eberbach, Reichenbacher
SS 2020	2540493	Data Science for the Industrial Internet of Things	SWS	Seminar (S)	Martin, Kühl
SS 2020	2540510	Masterseminar in Data Science and Machine Learning	2 SWS	Seminar (S)	Geyer-Schulz
SS 2020	2540559	Digital Service Design Seminar	3 SWS	Seminar (S)	Mädche, Feine
SS 2020	2545002	Entrepreneurship Research	2 SWS	Seminar (S)	Terzidis, Henn
SS 2020	2550493	Hospital Management	2 SWS	Block (B)	Hansis
SS 2020	2571180	Seminar in Marketing und Vertrieb (Bachelor)	2 SWS	Seminar (S)	Klarmann, Mitarbeiter, Feurer
SS 2020	2571181	Seminar in Marketing und Vertrieb (Master)	2 SWS	Seminar (S)	Klarmann, Mitarbeiter, Feurer
SS 2020	2572177	Open Science and Reproducibility Journal Club (Reproducibilitea)	SWS	Seminar (S)	Oberholzer
SS 2020	2579909	Seminar Management Accounting	2 SWS	Seminar (S)	Wouters, Hammann, Disch
SS 2020	2579919	Seminar in Management Accounting - Special Topics	2 SWS	Seminar (S)	Wouters, Ebinger
SS 2020	2581977	Seminar Produktionswirtschaft und Logistik II	2 SWS	Seminar (S)	Volk, Schultmann
SS 2020	2581980	Seminar Energiewirtschaft II	2 SWS	Seminar (S)	Keles
SS 2020	2581990		2 SWS	Seminar (S)	Schultmann, Schumacher, Baumgartner
WS 20/21	2500006	Seminar Human Resource Management (Master)	2 SWS	Seminar (S) / 	Nieken, Mitarbeiter
WS 20/21	2500007	Seminar Human Resources and Organizations (Master)	2 SWS	Seminar (S) / 	Nieken, Mitarbeiter
WS 20/21	2500019	Digital Citizen Science	2 SWS	Seminar (S)	Weinhardt
WS 20/21	2500125	Current Topics in Digital Transformation Seminar	3 SWS	Seminar (S) / 	Mädche
WS 20/21	2530293		2 SWS	Seminar (S) / 	Ruckes, Hoang, Benz, Strych, Luedecke, Silbereis, Wiegratz

WS 20/21	2530372	Advances in Financial Machine Learning	2 SWS	Seminar (S) / 	Ulrich
WS 20/21	2540473	Data Science in Service Management	2 SWS	Seminar (S) / 	Haubner, Dann, Badewitz, Stoeckel
WS 20/21	2540475	Electronic Markets & User behavior	2 SWS	Seminar (S) / 	Knierim
WS 20/21	2540477	Digital Experience and Participation	2 SWS	Seminar (S) / 	Straub, Peukert, Hoffmann, Pusmaz, Willrich, Kloepper, Fegert, Greif-Winzrieth
WS 20/21	2540478	Smart Grids and Energy Markets	2 SWS	Seminar (S) / 	Staudt, Richter, Huber, vom Scheidt, Golla, Schmidt, Henni, Meinke
WS 20/21	2540510	Master Seminar in Data Science and Machine Learning	2 SWS	Seminar (S)	Geyer-Schulz, Schweigert, Schweizer, Nazemi
WS 20/21	2540557	Information Systems and Service Design Seminar	3 SWS	Seminar (S)	Mädche
WS 20/21	2540559	Digital Service Design Seminar	3 SWS	Seminar (S)	Mädche
WS 20/21	2545107	Methoden im Innovationsmanagement	2 SWS	Seminar (S) / 	Koch
WS 20/21	2545111	Methoden entlang des Innovationsprozesses	2 SWS	Seminar (S) / 	Beyer
WS 20/21	2572181		2 SWS	Seminar (S) / 	Klarmann
WS 20/21	2579919	Seminar Management Accounting - Special Topics	2 SWS	Seminar (S) / 	Riar, Wouters, Ebinger
WS 20/21	2581976	Seminar in Production and Operations Management I	2 SWS	Seminar (S) / 	Glöser-Chahoud, Schultmann
WS 20/21	2581977	Seminar in Production and Operations Management II	2 SWS	Seminar (S) / 	Volk, Schultmann
WS 20/21	2581978	Seminar in Production and Operations Management III	2 SWS	Seminar (S) / 	Wiens, Schultmann
WS 20/21	2581980		2 SWS	Seminar (S) / 	Yilmaz, Fraunholz, Dehler-Holland, Kraft
WS 20/21	2581981		2 SWS	Seminar (S) / 	Ardone, Sandmeier, Scharnhorst
WS 20/21	2581990		2 SWS	Seminar (S)	Schumacher, Schultmann
Exams					
SS 2020	7500148	Proseminar: Practical Seminar: Interactive Analytics		Prüfung (PR)	Beigl, Mädche
SS 2020	7900017	Die Aushandlung von Open Innovation		Prüfung (PR)	Weissenberger-Eibl
SS 2020	7900019	Masterseminar in Data Science and Machine Learning		Prüfung (PR)	Geyer-Schulz
SS 2020	7900052	Entrepreneurship Research		Prüfung (PR)	Terzidis
SS 2020	7900093	Seminar in Business Administration A		Prüfung (PR)	Weinhardt
SS 2020	7900101	Seminar Human Resource Management (Master)		Prüfung (PR)	Nieken
SS 2020	7900127	Seminar in Finance (Master)		Prüfung (PR)	Uhrig-Homburg
SS 2020	7900180	Seminar in Business Administration		Prüfung (PR)	Weinhardt
SS 2020	7900214	Seminar Business Data Analytics (Master)		Prüfung (PR)	Weinhardt
SS 2020	7900219	Seminar in Business Administration A (Master)		Prüfung (PR)	Ulrich
SS 2020	7900231	Seminar Human Resources and Organizations (Master)		Prüfung (PR)	Nieken
SS 2020	7900233	Seminar in Marketing and Sales		Prüfung (PR)	Klarmann
SS 2020	7900238	Technology Assessment		Prüfung (PR)	Weissenberger-Eibl

SS 2020	7900242	Applied Risk and Asset Management	Prüfung (PR)	Ulrich
SS 2020	7900249	Open Science and Reproducibility Journal Club (Reproducibilitea)	Prüfung (PR)	Scheibehenne
SS 2020	7900256	Seminar Electronic Markets & User Behavior	Prüfung (PR)	Weinhardt
SS 2020	7900261	Information Systems and Design (ISSD) Seminar	Prüfung (PR)	Mädche
SS 2020	7900284	Digital Transformation and Business Models	Prüfung (PR)	Weissenberger-Eibl
SS 2020	7900288	Seminar Business Data Analytics	Prüfung (PR)	Weinhardt
SS 2020	7900300	Seminar in Business Administration A (Master)	Prüfung (PR)	Satzger
SS 2020	79-2579909-M	Seminar Management Accounting (Master)	Prüfung (PR)	Wouters
SS 2020	797981990	Seminar in Production and Operations Management IV	Prüfung (PR)	Schultmann
SS 2020	7981976	Seminar in Production and Operations Management I	Prüfung (PR)	Schultmann
SS 2020	7981977	Seminar in Production and Operations Management II	Prüfung (PR)	Schultmann
SS 2020	7981978	Seminar in Production and Operations Management III	Prüfung (PR)	Schultmann
SS 2020	7981980	Seminar Energy Economics II	Prüfung (PR)	Fichtner
SS 2020	7981981	Seminar Energy Economics III	Prüfung (PR)	Fichtner
WS 20/21	7900037	Seminar in Business Administration A (Master)	Prüfung (PR)	Satzger
WS 20/21	7900125	Current Topics in Digital Transformation Seminar	Prüfung (PR)	Mädche
WS 20/21	7900163	Seminar Human Resource Management (Master)	Prüfung (PR)	Nieken
WS 20/21	7900164	Seminar Human Resources and Organizations (Master)	Prüfung (PR)	Nieken
WS 20/21	7900184	Seminar in Finance (Master)	Prüfung (PR)	Ruckes
WS 20/21	7900233	Information Systems and Service Design Seminar	Prüfung (PR)	Mädche
WS 20/21	7981976	Seminar in Production and Operations Management I	Prüfung (PR)	Schultmann
WS 20/21	7981977	Seminar in Production and Operations Management II	Prüfung (PR)	Schultmann
WS 20/21	7981978	Seminar in Production and Operations Management III	Prüfung (PR)	Schultmann

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:



Interactive Analytics Seminar

2400121, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Content

Providing new and innovative ways for interacting with data is becoming increasingly important. In this seminar, an interdisciplinary team of students engineers a running software prototype of an advanced interactive system leveraging state-of-the-art hardware and software focusing on an analytical use case. The seminar is carried out in cooperation between Teco/Chair of Pervasive Computing Systems (Prof. Beigl) and the Institute of Information Systems and Marketing (Research Group ISSD, Prof. Mädche). This seminar follows an interdisciplinary approach. Students the fields of computer science, information systems and industrial engineering work together in teams.

Learning Objectives

- Explore and specify a data-driven interaction challenge
- Suggest and evaluate different design solutions for addressing the identified problem
- Build interactive analytics prototypes using advanced interaction concepts and pervasive computing technologies

Prerequisites

Strong analytic abilities and profound skills in SQL as wells as Python and/or R are required.

Literature

Further literature will be made available in the seminar.

Organizational issues

nach Vereinbarung



Seminar Human Resource Management (Master)

2500006, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues

Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben



Seminar Human Resources and Organizations (Master)

2500007, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues

Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

**Advances in Financial Machine Learning**

2530372, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

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 important computational risk and asset management problems. In particular we will use the state of the art Python programming language to implement investment related applications and/ or Finance 4.0 risk management solutions.

In a bi-weekly schedule you and your supervisor will first learn and discuss important machine learning concepts and then apply it within a practical FinTech project to real-world data. As a prerequisite students should already have some basic Python and data science skills.

Organizational issues

Blücherstr. 17, E009; 14-tägig, tba

Literature

Literatur wird in der ersten Vorlesung bekannt gegeben.

**Seminar in Finance**

2530580, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Organizational issues**Termine**

1. Termin laut Ankündigung des Lehrstuhls

02.07. von 8 bis 19 Uhr

03.07. von 8 bis 19 Uhr

Alle Termine finden in Geb. 09.21 statt.

Literature

Wird jeweils am Ende des vorherigen Semesters bekanntgegeben.

**Data Science for the Industrial Internet of Things**2540493, SS 2020, SWS, Language: English, [Open in study portal](#)**Seminar (S)****Content****Learning Objectives**

1. Gain practical experience in translating a business problem into a data modeling problem
2. Apply solid theoretical foundations from lectures to real-world data
3. Acquire hands-on experience with industrial data science tools
4. Learn how to communicate data science findings to business stakeholders

Course Credits

The practical seminar can be credited as Seminar Betriebswirtschaftslehre A [WIWI-103474] (3 ECTS). Other courses can be credited upon request.

Seminar Description

The Internet of Things is significantly transforming industries such as automotive, healthcare, and energy. With the rise of ubiquitous computing power, internet access, and economical sensors – physical products turn into cyber-physical smart products that create vast amounts of data.

Current airplanes for example have around 6.000 sensors, creating around 1 TB of data per flight. This data is about the size of all tweets in 3 months worldwide. And this number is growing tremendously. But only 3% of potentially useful data is tagged today, and even less is analyzed. Although Internet of Things use cases such as predictive maintenance are projected to help companies save \$630 billion by 2025 (McKinsey, 2015), companies struggle to turn sensor data into actionable insights. To solve this challenge, substantive expertise needs to be combined with skills from software engineering and statistics and machine learning to generate valuable insights from machine data.

The practical seminar is held in cooperation with industry partners of the KSRI, which provide some real-world datasets. Students will then work in teams of three in a close and agile collaboration with the industry subject matter experts from around the world, making use of the CRISP DM methodology (Chapman et al. 2000)

There will be four different topics and datasets, each assigned to a team of three students. The assignment will be done in the kickoff in calendar week 18. The exact date of the kickoff event will be determined when the participating students have been selected. Attendance at the kickoff event in calendar week 18 is mandatory and a prerequisite for participation.

Expertise in Python and Data Science / Machine Learning is strongly recommended.

Contact

Dominik Martin – dominik.martin@kit.edu

Dr. Niklas Kühl – niklas.kuehl@kit.edu

The practical seminar will be held in English. Application documents can be handed in in English or German.

**Masterseminar in Data Science and Machine Learning**2540510, SS 2020, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)****Digital Service Design Seminar**2540559, SS 2020, 3 SWS, Language: English, [Open in study portal](#)**Seminar (S)**

Content**Description**

In this seminar, a team of students addresses a real-world design challenge of an IISM cooperation partner. Students learn and apply design methods, techniques, and tools to explore the problem and deliver a solution in the form of an innovative prototype

Learning objectives

The students

- explore a real-world digital service design challenge
- understand the human-centered design process and apply selected design techniques & tools
- deliver a digital service prototype as a potential solution for the challenge

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

**Entrepreneurship Research**

2545002, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Organizational issues

1. Termin: Do, 23.04.2020, 09:00 - 13:00 Uhr

2. Termin: Mi, 15.07.2020, 09:00 - 16:00 Uhr

Beide Termine finden in Geb. 01.85, Raum 511 statt

Literature

Wird im Seminar bekannt gegeben.

**Hospital Management**

2550493, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Block (B)

Content

The seminar 'Hospital Management' presents internal organization structures, work conditions and work environments at the example of hospitals und relates this to common and expected conditions of other service industries.

Covered topics include normative environment, intra-organizational structure, personnel management, quality, external networking and market appearance. The course consists of two full-day sessions.

The assessment consists of attendance and a presentation or a case study.

**Open Science and Reproducibility Journal Club (Reproducibilitea)**

2572177, SS 2020, SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content**Goal**

The goal of the class is to discuss the topics of Open Science and Reproducibility in the Social Sciences. Students will develop an understanding of the challenges that the field has been facing since the start of the Reproducibility Crisis and possible solutions to the problem will be evaluated and discussed in class.

Description

Starting in around 2011, the Social Sciences have entered a so-called Reproducibility Crisis as many findings made in previous studies showed to be difficult or impossible to replicate, a problem casting doubt on the validity of research findings in the field. In class, we will discuss the proposed causes of the crisis – ranging from bad incentive structures in the publication process over statistical malpractice to outright fraud – and their possible solutions. The class will help students to develop an understanding of current debates and challenges from a meta-science perspective.

The class will be held in English.

Grading

There will be weekly homework assignment based on the articles discussed. Additionally, students are required to hold a short presentation, in which they summarize the key message of an article. The scientific literature will be provided to the students.

The homework and presentation will be given in English.

Workload

The total workload for this course is estimated to be 90 hours (30 hours per ECTS / 2 SWS). The class will meet once per week (Thursday morning 10-12) over the semester to discuss an article on the topic. The homework (including the reading and course preparation) is estimated to take 3h-5h each week.

Comment

This course is based on the Reproducibility initiative at the University of Oxford. See here for more information: <https://reproducibility.org>

**Seminar Management Accounting**

2579909, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content

The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. You are to a large extent free to select your own topic. The seminar course is concentrated in four meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources).

Workload:

- The total workload for this course is approximately 90 hours. For further information see German version.

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Required prior Courses:

- The LV "Betriebswirtschaftslehre: Finanzwirtschaft und Rechnungswesen" (2600026) must have been completed before starting this seminar.

Note:

- Maximum of 16 students.

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 2020, 2 SWS, Language: English, [Open in study portal](#)**Seminar (S)****Content**

The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively prediscussed. The seminar course is concentrated in several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources).

Workload:

- The total workload for this course is approximately 90 hours. For further information see German version.

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Required prior Courses:

- The LV "Betriebswirtschaftslehre: Finanzwirtschaft und Rechnungswesen" (2600026) must have been completed before starting this seminar.

Note:

- Maximum of 16 students.

Organizational issues

Geb.05.20, 2A-12.1; Termine werden bekannt gegeben

Literature

Will be announced in the course.

**Seminar Human Resource Management (Master)**2500006, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)**Seminar (S)
Online**

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

Literature

Selected journal articles and books.


Seminar Human Resources and Organizations (Master)

2500007, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

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


Digital Citizen Science

2500019, WS 20/21, 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.

**Advances in Financial Machine Learning**

2530372, WS 20/21, 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 important computational risk and asset management problems. In particular we will use the state of the art Python programming language to implement investment related applications and/ or Finance 4.0 risk management solutions.

In a bi-weekly schedule you and your supervisor will first learn and discuss important machine learning concepts and then apply it within a practical FinTech project to real-world data. As a prerequisite students should already have some basic Python and data science skills.

Organizational issues

14-tägig, tba

Literature

Literatur wird in der ersten Vorlesung bekannt gegeben.

**Data Science in Service Management**

2540473, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Content

wird auf deutsch und englisch gehalten

Organizational issues

Blockveranstaltung, siehe WWW

**Master Seminar in Data Science and Machine Learning**

2540510, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

**Digital Service Design Seminar**

2540559, WS 20/21, 3 SWS, [Open in study portal](#)

Seminar (S)

**Methoden im Innovationsmanagement**

2545107, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

The seminar "Methods in Innovation Management" aims at the discussion and development of different methods for the structured generation of ideas in selected contexts. In a block seminar, methods and contexts are discussed, from which seminar topics are defined with the participants. These topics are to be worked on independently using methods and procedures. The results will be presented at a presentation date and then a written seminar paper will be prepared. This means that creativity methods and their combination will be presented and applied. The methods are worked on in a structured form and process-like sequence in order to clarify the advantages and disadvantages of different methods.

Literature

Werden in der ersten Veranstaltung bekannt gegeben.



2572181, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

The seminary teaches students to gain a systematic overview of a field of literature in Marketing - an important prerequisite for a successful master thesis. Central aspects are identification of relevant literature sources, systematization of the field, working out central insights, writing comprehensively, and identification of research gaps.

Students

- can exploit a literature field systematically
- are able to write an academic paper in a formally correct way
- can assess the relevance and quality of sources
- are able to get an overview of sources very quickly
- know how to find relevant sources for a literature field
- are capable to write a convincing outline
- know how to categorize a subject under a research field
- understand how to systematize literature fields theoretically and empirically with the help of literature tables
- can identify the most important findings in a huge number of sources
- are able to present a research field
- can discuss the theoretical and practical implications of a topic
- are capable to identify interesting research gaps

The total workload for this course is approximately 90 hours. For further information see German version.

Students interested in master thesis positions at the chair of marketing should participate in the marketing seminar. For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu)

Organizational issues

Blockveranstaltung, Termine werden noch bekannt gegeben

Literature

werden im Seminar bekannt gegeben./will be announced in the seminary.



Seminar Management Accounting - Special Topics

2579919, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)
On-Site

Content

The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively prediscbed. The seminar course is concentrated in several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources).

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Required prior Courses:

- The LV "Betriebswirtschaftslehre: Finanzwirtschaft und Rechnungswesen" (2600026) must have been completed before starting this seminar.

Workload:

- The total workload for this course is approximately 90 hours. For further information see German version.

Note:

- Maximum of 16 students.

Literature

Will be announced in the course.

T

6.348 Course: Seminar in Economic Policy [T-WIWI-102789]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101514 - Innovation Economics](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Competence Certificate

The assessment is carried out through a term paper within the range of 12 to 15 pages, a presentation of the results of the work in a seminar meeting, and active participation in the discussions of the seminar meeting (§ 4 (2), 3 SPO).

The final grade is composed of the weighted scored examinations (Essay 50%, 40% oral presentation, active participation 10%).

Prerequisites

None




Recommendation



At least one of the lectures "Theory of Endogenous Growth" or "Innovation Theory and Policy" should be attended in advance, if possible.

T

6.349 Course: Seminar in Economics A (Master) [T-WIWI-103478]**Responsible:** Professorenschaft des Fachbereichs Volkswirtschaftslehre**Organisation:** KIT Department of Economics and Management**Part of:** M-WIWI-102736 - Seminar Module Economic Sciences

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2020	2521310	Advanced Topics in Econometrics	2 SWS	Seminar (S)	Schienze, Krüger, Buse, Görden
SS 2020	2560282	Wirtschaftspolitisches Seminar	2 SWS	Seminar (S)	Ott, Assistenten
SS 2020	2560555	Fighting Climate Change, Seminar on Morals and Social Behavior (Master)	2 SWS	Seminar (S)	Szech, Zhao
SS 2020	2560557	Designing the Digital Economy, Topics on Political Economy (Master)	2 SWS	Seminar (S)	Szech, Huber
WS 20/21	2560140	Topics in Political Economy (Bachelor)	2 SWS	Seminar (S) / 	Szech, Huber
WS 20/21	2560142	Topics in Political Economy (Master)	2 SWS	Seminar (S) / 	Szech, Huber
WS 20/21	2560143	Morals & Social Behavior (Master)	2 SWS	Seminar (S) / 	Szech, Zhao
WS 20/21	2561208	Ausgewählte Aspekte der europäischen Verkehrsplanung und -modellierung	1 SWS	Seminar (S) / 	Szimba
Exams					
SS 2020	7900059	Seminar in Economics B (Master)		Prüfung (PR)	Szech
SS 2020	7900060	Seminar in Economics B (Master)		Prüfung (PR)	Szech
SS 2020	7900081	Seminar in Macroeconomics I		Prüfung (PR)	Scheffel
SS 2020	7900236	Seminar in Economics A (Master)		Prüfung (PR)	Puppe
SS 2020	7900291	Seminar Strategic Decisions		Prüfung (PR)	Ehrhart
SS 2020	79sefi2	Seminar Empirical Development Economics A (Master)		Prüfung (PR)	Wigger

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.

RecommendationSee 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:

**Advanced Topics in Econometrics**

2521310, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

**Fighting Climate Change, Seminar on Morals and Social Behavior (Master)**

2560555, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content

For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

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.

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

**Designing the Digital Economy, Topics on Political Economy (Master)**

2560557, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

**Topics in Political Economy (Bachelor)**

2560140, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)
Online**Content**

For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

Seminar Papers of 8–10 pages are to be handed in.

For bachelor students grades will be based on the quality of presentations in the seminar (50%) and the seminar paper (50%). Students can improve their grades by 0.3 for good and constructive discussion contributions or by 0.7 for excellent and constructive discussion contributions.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Topics in Political Economy (Master)**

2560142, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)
Online

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>







Seminar Papers of 8–10 pages are to be handed in.

For Master students, grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (40%). Additionally students will have to hand in two abstracts with their paper – one with a maximum length of 100 words and one with a maximum length of 150 words. The quality of abstracts will reflect with 20% in the final grade. Students can improve their grades by 0.3 for good and constructive discussion contributions or by 0.7 for excellent and constructive discussion contributions.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

T

6.350 Course: Seminar in Informatics B (Master) [T-WIWI-103480]**Responsible:** Professorenschaft des Fachbereichs Informatik**Organisation:** KIT Department of Economics and Management**Part of:** M-INFO-102822 - Seminar Module Informatics**Type**
Examination of another type**Credits**
3**Recurrence**
Each term**Version**
1

Events					
SS 2020	2513211	Seminar Business Information Systems (Master)	2 SWS	Seminar (S)	Oberweis, Fritsch, Frister, Schreiber, Schüler, Ullrich
SS 2020	2513309	Seminar Knowledge Discovery and Data Mining (Master)	3 SWS	Seminar (S)	Sure-Vetter, Herbold, Färber, Nguyen, Noullet, Saier
SS 2020	2513311	Seminar Data Science & Real-time Big Data Analytics (Master)	2 SWS	Seminar (S)	Sure-Vetter, Riemer, Zehnder
SS 2020	2513403	Emerging Trends in Internet Technologies (Master)	2 SWS	Seminar (S)	Lins, Sunyaev, Thiebes
SS 2020	2513405	Emerging Trends in Digital Health (Master)	2 SWS	Seminar (S)	Lins, Sunyaev, Thiebes
SS 2020	2513500	Cognitive Automobiles and Robots	2 SWS	Seminar (S)	Zöllner
SS 2020	2513553	Seminar E-Voting (Master)	2 SWS	Seminar (S)	Beckert, Müller-Quade, Volkamer, Dörre, Düzgün, Kirsten, Schwerdt
SS 2020	2513555	Seminar Security, Usability and Society (Master)	2 SWS	Seminar (S)	Volkamer, Aldag, Berens, Mayer, Mossano, Düzgün
SS 2020	2595470	Seminar Service Science, Management & Engineering	2 SWS	Seminar (S)	Weinhardt, Nickel, Fichtner, Satzger, Sure-Vetter, Fromm
WS 20/21	2400125	Security and Privacy Awareness	2 SWS	Seminar (S) / 	Boehm, Volkamer, Aldag, Gottschalk, Mayer, Mossano, Düzgün
WS 20/21	2513311	Seminar Data Science & Real-time Big Data Analytics (Master)	2 SWS	Seminar (S) / 	Sure-Vetter, Kulbach, Riemer, Zehnder
WS 20/21	2513312	Seminar Linked Data and the Semantic Web (Bachelor)	2 SWS	Seminar (S) / 	Sure-Vetter, Acosta Deibe, Käfer, Heling
WS 20/21	2513313	Seminar Linked Data and the Semantic Web (Master)	2 SWS	Seminar (S) / 	Sure-Vetter, Acosta Deibe, Käfer, Heling
WS 20/21	2513500	Seminar Cognitive Automobiles and Robots (Master)	2 SWS	Seminar (S) / 	Zöllner
WS 20/21	2513601	Seminar Representation Learning for Knowledge Graphs (Master)	2 SWS	Seminar (S) / 	Sack, Alam, Dessi, Biswas
Exams					
SS 2020	7900092	Seminar Service Science, Management & Engineering		Prüfung (PR)	Sure-Vetter
SS 2020	7900128	Emerging Trends in Internet Technologies (Master)		Prüfung (PR)	Sunyaev
SS 2020	7900146	Emerging Trends in Digital Health (Master)		Prüfung (PR)	Sunyaev
SS 2020	7900147	Cognitive Automobiles and Robots		Prüfung (PR)	Zöllner
SS 2020	7900194	Seminar Mathematics		Prüfung (PR)	Volkamer

SS 2020	7900196	Seminar Next Generation Process Modelling in the Digital Transformation Age	Prüfung (PR)	Oberweis
SS 2020	7900198	Seminar Data Science & Real-time Big Data Analytics (Master)	Prüfung (PR)	Sure-Vetter
SS 2020	7900200	Seminar E-Voting (Master)	Prüfung (PR)	Volkamer
SS 2020	7900202	Seminar Knowledge Discovery and Data Mining (Master)	Prüfung (PR)	Sure-Vetter
SS 2020	7900218	Seminar Security, Usability and Society (Master)	Prüfung (PR)	Volkamer
WS 20/21	7500220	Seminar Ubiquitous Computing	Prüfung (PR)	Beigl

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.

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 Knowledge Discovery and Data Mining (Master)

2513309, SS 2020, 3 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content

In this seminar different machine learning and data mining methods are implemented.

The seminar includes different methods of machine learning and data mining. Participants of the seminar should have basic knowledge of machine learning and programming skills.

Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

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

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.

**Seminar Data Science & Real-time Big Data Analytics (Master)****Seminar (S)**2513311, SS 2020, 2 SWS, Language: English, [Open in study portal](#)**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 practical seminar is given under the following Link:

<http://seminar-cep.fzi.de>

Questions are answered via the e-mail address sem-ep@fzi.de.

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.

**Cognitive Automobiles and Robots****Seminar (S)**2513500, SS 2020, 2 SWS, Language: German/English, [Open in study portal](#)**Content**

The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

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

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

**Seminar E-Voting (Master)****Seminar (S)**2513553, SS 2020, 2 SWS, Language: German/English, [Open in study portal](#)

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.

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

2513555, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)**Content****Seminar:**

The main topic of this seminar is security, usability, and society. The goal is to analyze these topics from different perspectives. Always important is the human, as we are interested in how humans interact with certain problems and how it might be possible to tackle it. For instance, phishing detection, how is it possible to ensure a higher detection. To tackle this problem, you can either focus on the technical side, awareness training, regulations by organizations.

Further important information:

Because of the current situation, every meeting will be held online. This might change during the semester, depending on the course of the corona situation.

Important dates:

- Kick-Off 22.04
- Final submission 01.07
- Presentation 14.07

Topics:

- Do the SECUSO password awareness and education materials reflect the new "BSI Grundschutz"
- Systematic literature on security interventions in the context of phishing
- Key factors in "good" phishing emails
- Systematic literature review categorization of phishing paper

Further descriptions of the topics will be announced asap.

This course can also be credited for the KASTEL certificate. Further information about obtaining the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php.

**Seminar Service Science, Management & Engineering**

2595470, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)**Content**

Each Semester, the seminar will cover topics from a different selected subfield of Service Science, Management & Engineering. Topics include service innovation, service economics, service computing, transformation and coordination of service value networks as well as collaboration for knowledge intensive services.

See the KSRI website for more information about this seminar: www.ksri.kit.edu

Learning objectives:

The student

- illustrates and evaluates classic and current research questions in service science, management and engineering,
- applies models and techniques in service science, also with regard to their applicability in practical cases,
- successfully gets in touch with scientific working by an in-depth working on a special scientific topic which makes the student familiar with scientific literature research and argumentation methods,
- acquires good rhetorical and presentation skills.

As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic.

Recommendations:

Lecture eServices [2595466] is recommended.

Workload:

The total workload for this course is approximately 90 hours.

Organizational issues

siehe Ankündigung des Instituts

Literature

Die Basisliteratur wird entsprechend der zu bearbeitenden Themen bereitgestellt.

**Security and Privacy Awareness**

2400125, WS 20/21, 2 SWS, [Open in study portal](#)

Seminar (S)
Online

Content

Within the framework of this interdisciplinary seminar, the topics security awareness and privacy awareness are to be considered from different perspectives. It deals with legal, information technology, psychological, social as well as philosophical aspects.

Dates:

- Kick-Off: TBA
- Final version: TBA
- Presentation: TBA

Topics will be assigned after the Kick-Off.

Topics:

TBA

ATTENTION: The seminar is only for MASTER students!

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.

**Seminar Data Science & Real-time Big Data Analytics (Master)**

2513311, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

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.

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.

**Seminar Linked Data and the Semantic Web (Bachelor)**

2513312, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Content

Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this 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 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 Linked Data and the Semantic Web (Master)**

2513313, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Content

Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this 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 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 Cognitive Automobiles and Robots (Master)**

2513500, WS 20/21, 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 Representation Learning for Knowledge Graphs (Master)**

2513601, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)
Online

Content

Participation is restricted to 10 students max.

Contributions of the students:

Each student will be assigned at max 2 papers on the topic. Out of which the student will have to give a seminar presentation and write a seminar report paper of 15 pages explaining the methods from at least one of the two assigned papers, in their own words.

Implementation (if applicable):

If code is available from the authors, then re-implementation of it for small scale experiments using *Google Colab* with *python*.

Teaching Team:

- Dr. Mehwish Alam
- Dr. Danilo Dessi
- M. Sc. Russa Biswas

Data representation or feature representation plays a key role in the performance of machine learning algorithms. In recent years, rapid growth has been observed in Representation Learning (RL) of words and Knowledge Graphs (KG) into low dimensional vector spaces and its applications to many real-world scenarios. Word embeddings are a low dimensional vector representation of words that are capable of capturing the context of a word in a document, semantic similarity as well as its relation with other words. Similarly, KG embeddings are a low dimensional vector representation of entities and relations from a KG preserving its inherent structure and capturing the semantic similarity between the entities. Each embedding space exhibits different semantic characteristics based on the source of information, e.g, text or KGs as well as the learning of the embedding algorithms. The same algorithm, when applied to different representations of the same training data, leads to different results due to the variation in the features encoded in the respective representations. The distributed representation of text in the form of the word and document vectors as well as of the entities and relations of the KG in form of entity and relation vectors have evolved as the key elements of various natural language processing tasks such as Entity Linking, Named Entity Recognition and disambiguation, etc. Different embedding spaces are generated for textual documents of different languages, hence aligning the embedding spaces has become a stepping stone for machine translation. On the other hand, in addition to multilingualism and domain-specific information, different KGs of the same domain have structural differences, making the alignment of the KG embeddings more challenging. In order to generate coherent embedding spaces for knowledge-driven applications such as question answering, named entity disambiguation, knowledge graph completion, etc., it is necessary to align the embedding spaces generated from different sources.

In this seminar, we would like to study the different state of the art algorithms for aligning embedding space. We would focus on two types of alignment algorithms: (1) Entity - Entity alignment, and (2) Entity - Word alignment.

Organizational issues

Registration and further information can be found in the WiWi-portal.



6.351 Course: Seminar in Information Systems (Master) [T-WIWI-109827]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-104815 - Seminar Information Systems

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2020	2540493	Data Science for the Industrial Internet of Things	SWS	Seminar (S)	Martin, Kühl
SS 2020	2540553	Interactive Analytics Seminar	2 SWS	Seminar (S)	Mädche, Beigl, Toreini, Pescara
SS 2020	2540559	Digital Service Design Seminar	3 SWS	Seminar (S)	Mädche, Feine
SS 2020	2572177	Open Science and Reproducibility Journal Club (Reproducibilitea)	SWS	Seminar (S)	Oberholzer
WS 20/21	2500019	Digital Citizen Science	2 SWS	Seminar (S)	Weinhardt
WS 20/21	2500125	Current Topics in Digital Transformation Seminar	3 SWS	Seminar (S) /	Mädche
WS 20/21	2540473	Data Science in Service Management	2 SWS	Seminar (S) /	Haubner, Dann, Badewitz, Stoeckel
WS 20/21	2540475	Electronic Markets & User behavior	2 SWS	Seminar (S) /	Knierim
WS 20/21	2540477	Digital Experience and Participation	2 SWS	Seminar (S) /	Straub, Peukert, Hoffmann, Pasmaz, Willrich, Kloepper, Fegert, Greif-Winzrieth
WS 20/21	2540478	Smart Grids and Energy Markets	2 SWS	Seminar (S) /	Staudt, Richter, Huber, vom Scheidt, Golla, Schmidt, Henni, Meinke
WS 20/21	2540559	Digital Service Design Seminar	3 SWS	Seminar (S)	Mädche
Exams					
SS 2020	7900093	Seminar in Business Administration A		Prüfung (PR)	Weinhardt
SS 2020	7900180	Seminar in Business Administration		Prüfung (PR)	Weinhardt
SS 2020	7900214	Seminar Business Data Analytics (Master)		Prüfung (PR)	Weinhardt
SS 2020	7900249	Open Science and Reproducibility Journal Club (Reproducibilitea)		Prüfung (PR)	Scheibehenne
SS 2020	7900261	Information Systems and Design (ISSD) Seminar		Prüfung (PR)	Mädche
SS 2020	7900288	Seminar Business Data Analytics		Prüfung (PR)	Weinhardt
WS 20/21	7900125	Current Topics in Digital Transformation Seminar		Prüfung (PR)	Mädche
WS 20/21	7900233	Information Systems and Service Design Seminar		Prüfung (PR)	Mädche

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 for WIWI-seminars are listed on the internet: <https://portal.wiwi.kit.edu>.

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

	Data Science for the Industrial Internet of Things 2540493, SS 2020, SWS, Language: English, Open in study portal	Seminar (S)
---	---	--------------------

Content**Learning Objectives**

1. Gain practical experience in translating a business problem into a data modeling problem
2. Apply solid theoretical foundations from lectures to real-world data
3. Acquire hands-on experience with industrial data science tools
4. Learn how to communicate data science findings to business stakeholders

Course Credits

The practical seminar can be credited as Seminar Betriebswirtschaftslehre A [WIWI-103474] (3 ECTS). Other courses can be credited upon request.

Seminar Description

The Internet of Things is significantly transforming industries such as automotive, healthcare, and energy. With the rise of ubiquitous computing power, internet access, and economical sensors – physical products turn into cyber-physical smart products that create vast amounts of data.

Current airplanes for example have around 6.000 sensors, creating around 1 TB of data per flight. This data is about the size of all tweets in 3 months worldwide. And this number is growing tremendously. But only 3% of potentially useful data is tagged today, end even less is analyzed. Although Internet of Things use cases such as predictive maintenance are projected to help companies save \$630 billion by 2025 (McKinsey, 2015), companies struggle to turn sensor data into actionable insights. To solve this challenge, substantive expertise needs to be combined with skills from software engineering and statistics and machine learning to generate valuable insights from machine data.

The practical seminar is held in cooperation with industry partners of the KSRI, which provide some real-world datasets. Students will then work in teams of three in a close and agile collaboration with the industry subject matter experts from around the world, making use of to the CRISP DM methodology (Chapman et al. 2000)

There will be four different topics and datasets, each assigned to a team of three students. The assignment will be done in the kickoff in calendar week 18. The exact date of the kickoff event will be determined when the participating students have been selected. Attendance at the kickoff event in calendar week 18 is mandatory and a prerequisite for participation.

Expertise in Python and Data Science / Machine Learning is strongly recommended.

Contact

Dominik Martin – dominik.martin@kit.edu

Dr. Niklas Kühl – niklas.kuehl@kit.edu

The practical seminar will be held in English. Application documents can be handed in in English or German.

**Digital Service Design Seminar**2540559, SS 2020, 3 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content**Description**

In this seminar, a team of students addresses a real-world design challenge of an IISM cooperation partner. Students learn and apply design methods, techniques, and tools to explore the problem and deliver a solution in the form of an innovative prototype

Learning objectives

The students

- explore a real-world digital service design challenge
- understand the human-centered design process and apply selected design techniques & tools
- deliver a digital service prototype as a potential solution for the challenge

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

**Open Science and Reproducibility Journal Club (Reproducibilitea)**2572177, SS 2020, SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content**Goal**

The goal of the class is to discuss the topics of Open Science and Reproducibility in the Social Sciences. Students will develop an understanding of the challenges that the field has been facing since the start of the Reproducibility Crisis and possible solutions to the problem will be evaluated and discussed in class.

Description

Starting in around 2011, the Social Sciences have entered a so-called Reproducibility Crisis as many findings made in previous studies showed to be difficult or impossible to replicate, a problem casting doubt on the validity of research findings in the field. In class, we will discuss the proposed causes of the crisis – ranging from bad incentive structures in the publication process over statistical malpractice to outright fraud – and their possible solutions. The class will help students to develop an understanding of current debates and challenges from a meta-science perspective.

The class will be held in English.

Grading

There will be weekly homework assignment based on the articles discussed. Additionally, students are required to hold a short presentation, in which they summarize the key message of an article. The scientific literature will be provided to the students.

The homework and presentation will be given in English.

Workload

The total workload for this course is estimated to be 90 hours (30 hours per ECTS / 2 SWS). The class will meet once per week (Thursday morning 10-12) over the semester to discuss an article on the topic. The homework (including the reading and course preparation) is estimated to take 3h-5h each week.

Comment

This course is based on the Reproducibilitea initiative at the University of Oxford. See here for more information: <https://reproducibilitea.org>

**Digital Citizen Science**2500019, WS 20/21, 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.

**Data Science in Service Management**

2540473, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Content

wird auf deutsch und englisch gehalten

Organizational issues

Blockveranstaltung, siehe WWW

**Digital Service Design Seminar**

2540559, WS 20/21, 3 SWS, [Open in study portal](#)

Seminar (S)

T

6.352 Course: Seminar in Operations Research A (Master) [T-WIWI-103481]

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

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-102736 - Seminar Module Economic Sciences](#)





Type
 Examination of another type

Credits
 3

Recurrence
 Each term

Version
 1

Events					
SS 2020	2550473	Seminar on Power Systems Optimization (Master)	2 SWS	Seminar (S)	Rebennack
SS 2020	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar (S)	Nickel, Mitarbeiter
WS 20/21	2550473	Seminar on Power Systems Optimization (Master)	2 SWS	Seminar (S) / 	Rebennack, Warwicker
WS 20/21	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar (S) / 	Nickel, Mitarbeiter
Exams					
SS 2020	7900232	Seminar: Modern OR and Innovative Logistics	Prüfung (PR)		Nickel
SS 2020	7900245	Seminar - Digitization in the Steel Industry	Prüfung (PR)		Nickel
SS 2020	7900283	Seminar in Operations Research A (Master)	Prüfung (PR)		Nickel
SS 2020	7900348	Seminar in Operations Research A (Master)	Prüfung (PR)		Rebennack
SS 2020	7900349	Seminar in Operations Research A (Master)	Prüfung (PR)		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:

V

Seminar: Modern OR and Innovative Logistics

2550491, SS 2020, 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.

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 bzw. auf dem WiWi-Portal bekannt gegeben

Literature

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

**Seminar: Modern OR and Innovative Logistics**

2550491, WS 20/21, 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.

Organizational issues

wird auf der Homepage bekannt gegeben

Literature

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.



6.353 Course: Seminar in Statistics A (Master) [T-WIWI-103483]

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

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-102736 - Seminar Module Economic Sciences](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2020	2521310	Advanced Topics in Econometrics	2 SWS	Seminar (S)	Schienle, Krüger, Buse, Görden
Exams					
SS 2020	7900150	Advanced Topics in Econometrics, Seminar in Statistics A (Master)	Prüfung (PR)		Schienle, Krüger
SS 2020	7900250	Data Mining and Applications (Projectseminar)	Prüfung (PR)		Nakhaeizadeh

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:



Advanced Topics in Econometrics

2521310, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Organizational issues




Blockveranstaltung, Termine werden bekannt gegeben





T

6.354 Course: Seminar Informatics A [T-INFO-104336]

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: [M-INFO-102822 - Seminar Module Informatics](#)

Type	Credits	Version
Examination of another type	3	1

Events					
SS 2020	2400011	Hot Topics in Bioinformatics	2 SWS	Seminar (S)	Stamatakis
SS 2020	2400144	Can Statistics Prove Cause and Effect?	2 SWS	Seminar (S)	Janzing
SS 2020	24344	Advanced Methods of Information Fusion	2 SWS	Seminar (S)	Hanebeck, Radtke
WS 20/21	2400072	Seminar: Service-oriented Architectures	SWS	Seminar (S) / 	Abeck, Schneider
WS 20/21	2400078	Seminar: Neuronale Netze und künstliche Intelligenz	SWS	Seminar (S) / 	Waibel, Stüker, Asfour, HA
WS 20/21	24844	Seminar: Ubiquitous Systems	2 SWS	Seminar (S) / 	Beigl, Pescara
Exams					
SS 2020	7500013	Advanced Methods of Information Fusion	Prüfung (PR)		Hanebeck, Noack
SS 2020	7500014	Seminar: Hot Topics in Bioinformatics	Prüfung (PR)		Stamatakis
SS 2020	7500040	Seminar Information Systems	Prüfung (PR)		Böhm
SS 2020	7500148	Proseminar: Practical Seminar: Interactive Analytics	Prüfung (PR)		Beigl, Mädche
SS 2020	7500162	Seminar: Ubiquitous Systems	Prüfung (PR)		Beigl, Riedel
SS 2020	7500276	Seminar: Can Statistics Prove Cause and Effect?	Prüfung (PR)		Geiselmann, Müller-Quade
SS 2020	75104740	Seminar: Service-Oriented Architectures	Prüfung (PR)		Abeck
WS 20/21	7500021	Advanced Methods of Information Fusion	Prüfung (PR)		Hanebeck
WS 20/21	7500122	CES - Seminar: Machine Learning	Prüfung (PR)		Henkel
WS 20/21	7500220	Seminar Ubiquitous Computing	Prüfung (PR)		Beigl
WS 20/21	7500267	Seminar Advanced Topics in Machine Translation	Prüfung (PR)		Waibel
WS 20/21	75104740	Seminar: Service-Oriented Architectures	Prüfung (PR)		Abeck

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

Seminar (S)

Content

Prerequisites: CS Master's level seminar. Participants must have attended and passed the course on "Introduction to Bioinformatics for Computer Scientists" in one of the preceding winter terms.

Task: You will need to select papers to present, give a presentation and write a report.

This main seminar allows students to understand and present the contents of current papers in Bioinformatics such as published for instance in the journals *Bioinformatics*, *BMC Bioinformatics*, *Journal of Computational Biology* etc. or at conferences such as ISMB or RECOMB.

We will provide a list of interesting papers, but students can also propose papers they are interested in. Students may also choose to cover broader topics of more general interest such as multiple sequence alignment, Bayesian phylogenetic inference, read assembly etc.

Each student will be assigned a lab member for help with understanding the article and preparing the slides as well as the report.

Students should give a 35 minute presentation on their topic of choice and write a report (Seminararbeit) comprising 8 pages.

Goals: Participants are able to understand, critically assess, and compare current research papers in Bioinformatics. They are able to present algorithms and models from current research papers in oral and written form at a level that corresponds to that of scientific publications and conference presentations. Participants are able to suggest extension to current methods.

Credits: 3 ECTS

Organizational issues

IMPORTANT: Register for the seminar mailing list by sending an email to 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.

**Advanced Methods of Information Fusion**

24344, SS 2020, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)

Content

The growing spread and performance of modern information and communication technologies produces an ever-increasing amount of data. It is one of the central challenges of our time to extract meaningful information from these data sets. The approach to address these issues, often called data science, combines strategies and methods from the fields of machine learning, mathematics, state estimation, visualization and pattern recognition. During this seminar, the students will familiarize themselves with concepts and methods particularly focusing on estimation theory and its application.

The seminar targets master students in computer science and bachelor students in Information engineering and management.

**Seminar: Neuronale Netze und künstliche Intelligenz**

2400078, WS 20/21, SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

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


Organizational issues





Die Anmeldung zum Seminar erfolgt über die Anmeldung zur Veranstaltung im Campus-System.

T**6.355 Course: Seminar Methods along the Innovation process [T-WIWI-110987]**

Responsible: Dr. Daniela Beyer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Irregular	1

Events					
WS 20/21	2545111	Methoden entlang des Innovationsprozesses	2 SWS	Seminar (S) / 	Beyer

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

Competence Certificate

Alternative exam assessment.

Recommendation

Prior attendance of the course Innovation Management [2545015] is recommended.

T**6.356 Course: Seminar: Governance, Risk & Compliance [T-INFO-102047]**

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [M-INFO-101242 - Governance, Risk & Compliance](#)

Type
 Examination of another type

Credits
 3

Version
 1






Events					
SS 2020	2400041	Governance, Risk & Compliance	2 SWS	Seminar (S)	Herzig
Exams					
SS 2020	7500140	Seminar: Legal Studies I		Prüfung (PR)	Dreier, Boehm, Matz





T

6.357 Course: Seminar: Legal Studies I [T-INFO-101997]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-INFO-101218 - Seminar Module Law

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2020	2400041	Governance, Risk & Compliance	2 SWS	Seminar (S)	Herzig
SS 2020	2400061	Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung	2 SWS	Seminar (S)	Bless, Boehm, Hartenstein, Mädche, Sunyaev, Zitterbart
SS 2020	2400153	Online Manipulative Practices: New Technologies and Fundamental Rights Infringements	2 SWS	Seminar (S)	Boehm
WS 20/21	2400060	Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection	2 SWS	Seminar (S) / 	Reussner, Raabe, Müller-Quade
WS 20/21	2400133	Hate speech & Fake news – Das öffentliche Recht in der „postrationalen Konstellation“?	2 SWS	Seminar (S) / 	Eichenhofer
WS 20/21	2400240	Grundfragen Ethik und IT	2 SWS	Seminar (S) / 	Dreier
WS 20/21	24389	IT-Sicherheit und Recht	2 SWS	Seminar (S) / 	Schallbruch
WS 20/21	2513214	Seminar Information security and data protection (Bachelor)	2 SWS	Seminar (S) / 	Oberweis, Volkamer, Raabe, Alpers, Düzgün, Schiefer, Wagner
Exams					
SS 2020	7500140	Seminar: Legal Studies I		Prüfung (PR)	Dreier, Boehm, Matz
SS 2020	7500159	Seminar: Legal Studies I		Prüfung (PR)	Eichenhofer
WS 20/21	7500035	Seminar: Legal Studies II		Prüfung (PR)	Eichenhofer
WS 20/21	7500182	Seminar: Legal Studies II		Prüfung (PR)	Dreier, Boehm, Raabe
WS 20/21	7500232	Seminar Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection		Prüfung (PR)	Reussner

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

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

V

Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung

2400061, SS 2020, 2 SWS, [Open in study portal](#)

Seminar (S)

Content

Registration via <https://portal.wiwi.kit.edu/ys/2708>

Organizational issues

nach Vereinbarung

V

Online Manipulative Practices: New Technologies and Fundamental Rights Infringements

2400153, SS 2020, 2 SWS, [Open in study portal](#)

Seminar (S)

Content

New science-based technologies are fostering the process of making individuals more amenable to forms of manipulation online. The more technological capabilities improve, the more surveillance expands, the life of individuals becomes transparent, easier to predict and therefore easier to manipulate. More invasive practices lead to infringements of fundamental rights, which are not always easy to detect, as surveillance and manipulation techniques are getting more sophisticated and less obvious. After the now notorious Cambridge Analytica data scandal, we have now hard evidence individuals are exposed to manipulative practices online, which are most of the time difficult to detect as they operate silently and automatically. Manipulative practices aim at covertly subverting another person's capacity for conscious decision-making by exploiting in particular his/her cognitive, emotional, or other decision-making vulnerabilities. They involve influences that (1) are hidden, (2) exploit vulnerabilities, and (3) are targeted. The seminar has the objective to discuss a series of new technologies and techniques that are and can be used in online manipulative practices and analyse their legal and ethical implications. Special attention is dedicated to the risk such practices pose to fundamental rights such as the right to privacy, the right to the protection of personal data and the right to non-discrimination.

10 sub-topics are provided below. It is a list of new technologies and techniques that can be used in manipulative practices. Students should pick one sub-topic in order to write a short paper and prepare a presentation. Students work is guided through a series of questions and a list of recommended literature. In short, papers and presentations should be generally structured in this way:

- Describe the technology/techniques.
- Describe the legal and ethical implications stemming from the use and application of the selected technology/techniques. What fundamental rights are at stake?
- Focus on one legal aspect, for example the infringement of the right to privacy, (the sub-topic title and description and list of literature already guide the student in this sense), analyse the current legal framework concerning the protection of that right and describe the legal challenges that these new technologies and methods pose.

We also encourage students to investigate possible technical solutions to the problems highlighted in their analysis.

Organizational issues

ACHTUNG: Es handelt sich um ein Seminar für **MASTER**-Studierende!

T**6.358 Course: Service Analytics A [T-WIWI-105778]**

Responsible: Prof. Dr. Hansjörg Fromm
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101448 - Service Management](#)
[M-WIWI-101470 - Data Science: Advanced CRM](#)
[M-WIWI-101506 - Service Analytics](#)
[M-WIWI-104814 - Information Systems: Analytical and Interactive Systems](#)

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

Events					
SS 2020	2595501	Service Analytics A	3 SWS	Lecture (V)	Schmitz
Exams					
SS 2020	7900303	Service Analytics A		Prüfung (PR)	Fromm
SS 2020	7900341	Service Analytics A		Prüfung (PR)	Satzger

Competence Certificate

Alternative exam assessment according to § 4 paragraph 2 Nr. 3 of the examination regulation.

Prerequisites

None

Recommendation

The lecture is addressed to students with interests and basic knowledge in the topics of Operations Research, descriptive and inductive statistics.

Annotation

This course is admission restricted.

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

V**Service Analytics A**

2595501, SS 2020, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

Learning objectives

This course teaches students how to apply machine learning concepts to develop predictive models that form the basis of many innovative service offerings and business models today. Using a selected use case each term, students learn the foundations of selected algorithms and development frameworks and apply them to build a functioning prototype of an analytics-based service. Students will become proficient in writing code in Python to implement a data science use case over the course period.

Description

Data-driven services have become a key differentiator for many companies. Their development is based on the increasing availability of structured and unstructured data and their analysis through methods from data science and machine learning. Examples comprise highly innovative service offerings based on technologies such as natural language processing, computer vision or reinforcement learning.

Using a selected use case, this lecture will teach students how to develop analytics-based services in an applied setting. We teach the theoretical foundations of selected machine learning algorithms (e.g., convolutional neural networks) and development concepts (e.g., developing modeling, training, inference pipelines) and teach how to apply these concepts to build a functioning prototype of an analytics-based service (e.g., inference running on a device). During the course, students will work in small groups to apply the learned concepts in the programming language Python using packages such as Keras, Tensorflow or Scikit-Learn.

Recommendations

The course is aimed at students in the Master program with basic knowledge in statistics and applied programming in Python. Familiarity with the contents of the lecture Artificial Intelligence in Service Systems will be beneficial.

Additional information

Due to the practical group sessions in the course, the number of participants is limited. Further information on the application process can be found on the course website (https://dsi.iism.kit.edu/64_411.php).

Please apply via the WiWi Portal until April 17, 2020: <https://portal.wiwi.kit.edu/ys/3539>

Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

Literature

- Friedman, Jerome, Trevor Hastie, and Robert Tibshirani. *The elements of statistical learning*. Vol. 1. No. 10. New York: Springer series in statistics, 2001.
- Russell, S., & Norvig, P. (2002). *Artificial intelligence: a modern approach*.
- Goldstein, E. B. (2009). *Sensation and perception*. 8th. Belmont: Wadsworth, Cengage Learning, 496(3).
- Gonzalez, Rafael C., Woods, Richard E. (2018). *Digital Image Processing*. 4th Pearson India
- Szeliski, R. (2010). *Computer vision: algorithms and applications*. Springer Science & Business Media.
- Redmon, J., Divvala, S., Girshick, R., & Farhadi, A. (2016). You only look once: Unified, real-time object detection. In *Proceedings of the IEEE conference on computer vision and pattern recognition*(pp. 779-788).
- Sermanet, P., Chintala, S., & LeCun, Y. (2012, November). Convolutional neural networks applied to house numbers digit classification. In *Proceedings of the 21st International Conference on Pattern Recognition (ICPR2012)*(pp. 3288-3291). IEEE.
- Ren, S., He, K., Girshick, R., & Sun, J. (2015). Faster r-cnn: Towards real-time object detection with region proposal networks. In *Advances in neural information processing systems*(pp. 91-99).
- Girshick, R., Donahue, J., Darrell, T., & Malik, J. (2014). Rich feature hierarchies for accurate object detection and semantic segmentation. In *Proceedings of the IEEE conference on computer vision and pattern recognition*(pp. 580-587).
- Krizhevsky, A., Sutskever, I., & Hinton, G. E. (2012). Imagenet classification with deep convolutional neural networks. In *Advances in neural information processing systems*(pp. 1097-1105).

T

6.359 Course: Service Design Thinking [T-WIWI-102849]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101503 - Service Design Thinking](#)

Type	Credits	Recurrence	Version
Examination of another type	12	Irregular	4

Exams				
SS 2020	7900314	Service Design Thinking	Prüfung (PR)	Satzger

Competence Certificate

Alternative exam assessment.

Prerequisites

None

Recommendation

This course is held in English – proficiency in writing and communication is required.

Our past students recommend to take this course at the beginning of the masters program.

Annotation

Due to practical project work as a component of the program, access is limited.

The module (as well as the module component) spans two semesters. It starts in September every year and runs until end of June in the subsequent year. Entering the program is only possible at its beginning - after prior application in May/June.

For more information on the application process and the program itself are provided in the module component description and the program's website (<http://sdt-karlsruhe.de>).

Furthermore, the KSRI conducts an information event for applicants every year in May.

This module is part of the KSRI Teaching Program „Digital Service Systems“. For more information see the KSRI Teaching website: www.ksri.kit.edu/teaching.

T

6.360 Course: Service Innovation [T-WIWI-102641]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101410 - Business & Service Engineering](#)
[M-WIWI-101448 - Service Management](#)
[M-WIWI-102806 - Service Innovation, Design & Engineering](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2595468	Service Innovation	2 SWS	Lecture (V)	Satzger
Exams					
SS 2020	7900266	Service Innovation		Prüfung (PR)	Satzger

Competence Certificate

The assessment consists of a written exam (60 min.). A bonus can be acquired through successful participation in the exercise. If the grade of the written exam is between 4.0 and 1.3, the bonus improves the grade by one grade (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites

None

Recommendation

None

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

V

Service Innovation

2595468, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

Continuous innovation is a prerequisite for firms to stay competitive. While innovation in manufacturing or agriculture can build on a considerable body of research, experience and best practices, innovation in services has not reached the same level of maturity.

This course takes a close look at the topic of service innovation. We will lay the foundations with an initial overview of service innovation including the basic concepts, challenges and innovation processes. We will compare product and service innovation and understand how innovation diffusion works.

The second part focuses on applicable methods and tools for service innovation: we will cover possible sources of innovations, ways to identify opportunities for innovations and the potential of service innovations built on data. For example, open and closed innovation approaches will be contrasted, the benefits of leveraging user communities to drive innovation will be explored and the human-centric innovation approach (Service) Design Thinking will be introduced. We will also look into the opportunities that technology offers for service innovation.

The last part of the lecture covers the management of service innovation and insights from practice. You will understand obstacles and enablers, and learn how to manage, incentivize and foster service innovation.

Literature

- Cardoso, J., Fromm, H., Nickel, S., Satzger, G., Studer, R., & Weinhardt, C. (Eds.) (2015). Fundamentals of service systems (Vol. 12). Heidelberg: Springer.
- Lusch, R. F., & Nambisan, S. (2015). Service innovation: A service-dominant logic perspective. *MIS quarterly*, 39(1), 155-175.
- Christensen, Clayton M. (2013). *The Innovator's Dilemma - when new technologies cause great firms to fail*. Boston, Massachusetts: Harvard Business Review Press.
- Rogers, S. (2003). *Diffusion of Innovations*. 5. ed. New York: Free Press.
- Chesbrough, H. W. (2011). *Open services innovation - rethinking your business to grow and compete in a new era*. 1. ed. San Francisco: Jossey-Bass.
- Chesbrough, H. (2011). *Open services innovation: Rethinking your business to grow and compete in a new era*. John Wiley & Sons.
- Uebernickel, F., Brenner, W., Pukall, B., Naef, T., & Schindlholzer, B. (2015). *Design Thinking: Das Handbuch*. Frankfurt am Main: Frankfurter Allgemeine Buch.
- Runco, M.A. (2014). *Creativity: Theories and Themes: Research, Development, and Practice* (2nd ed.). Amsterdam: Academic Press.

T

6.361 Course: Signals and Codes [T-INFO-101360]


Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: [M-INFO-100823 - Signals and Codes](#)





Type
Oral examination

Credits
3

Recurrence
Irregular

Version
1

Events					
WS 20/21	24137	Signals and Codes	2 SWS	Lecture (V) / 	Geiselmann, Müller-Quade
Exams					
SS 2020	7500179	Signals and Codes		Prüfung (PR)	Geiselmann, Müller-Quade

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

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

V

Signals and Codes

24137, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

In this lecture, bounds for codes (Hamming, Gilbert-Varshamov, Singleton) are presented. Coding and decoding for classical algebraic codes (linear, cyclic, Reed Solomon-, Goppa- und Reed Muller-codes) will be presented as well as concatenated codes.

Literature

Shu Lin, Daniel Costello, 'Error Control Coding', 2nd Ed., Pearson Prentice Hall, 2004

Todd Moon, 'Error Correction Coding', Wiley, 2005

Weitere Literatur wird in der Vorlesung bekannt gegeben.

Weiterführende Literatur

Wird in der Vorlesung bekannt gegeben.



6.362 Course: Simulation Game in Energy Economics [T-WIWI-108016]

Responsible: Dr. Massimo Genoese
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101451 - Energy Economics and Energy Markets](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each summer term	1

Events					
SS 2020	2581025	Simulation Game in Energy Economics	3 SWS	Lecture / Practice (VÜ)	Genoese, Zimmermann
Exams					
SS 2020	7981025	Simulation Game in Energy Economics		Prüfung (PR)	Fichtner

Competence Certificate

Examination as written assignment and oral presentation (§4 (2), 1 SPO).

Prerequisites

None

Recommendation

Visiting the course "Introduction to Energy Economics"

Annotation

See German version.

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



Simulation Game in Energy Economics

2581025, SS 2020, 3 SWS, Language: German, [Open in study portal](#)

Lecture / Practice (VÜ)

Content

- Introduction
- Agents and market places in the electricity industry
- Selected planning tasks of energy service companies
- Methods of modelling in the energy sector
- Agent-based simulation: The PowerACE model
- Simulation game: Simulation in energy economics (electricity and emission trading, investment decisions)

The lecture is structured in a theoretical and a practical part. In the theoretical part, the students are taught the basics to carry out simulations themselves in the practical part which comprises amongst others the simulation of the power exchange. The participants of the simulation game take a role as a power trader in the power market. Based on various sources of information (e.g. prognosis of power prices, available power plants, fuel prices), they can launch bids in the power exchange.

Assessment: presentation and written summary

Prerequisites: Basics in Energy economics and markets are advantageous.

Organizational issues

CIP-Pool West, Raum 102, Geb. 06.41 - siehe Institutsaushang

Literature

Weiterführende Literatur:

Möst, D. und Genoese, M. (2009): Market power in the German wholesale electricity market. The Journal of Energy Markets (47–74). Volume 2/Number 2, Summer 2009

T


6.363 Course: Smart Energy Infrastructure [T-WIWI-107464]

Responsible: Dr. Armin Ardone
Dr. Dr. Andrej Marko Pustisek

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101452 - Energy Economics and Technology](#)

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	1

Events					
WS 20/21	2581023	(Smart) Energy Infrastructure	2 SWS	Lecture (V) / 	Ardone, Pustisek
Exams					
SS 2020	7981023	Smart Energy Infrastructure		Prüfung (PR)	Fichtner

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.

Annotation

New course starting winter term 2017/2018.

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

V

(Smart) Energy Infrastructure

2581023, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content



- Basic terms and concepts
- Meaning of infrastructure
- Excursus: regulation of infrastructure
- Natural gas transportation
- Natural gas storage
- Electricity transmission
- (Overview) Crude oil and oil product transportation





T

6.364 Course: Smart Grid Applications [T-WIWI-107504]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101446 - Market Engineering](#)
[M-WIWI-103720 - eEnergy: Markets, Services and Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 20/21	2540452	Smart Grid Applications	2 SWS	Lecture (V) / 	Staudt
WS 20/21	2540453	Übung zu Smart Grid Applications	1 SWS	Practice (Ü) / 	Staudt

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

Competence Certificate

The assessment consists of a written exam (60 min) (according to §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

None

Recommendation

None

Annotation

The lecture will be read for the first time in winter term 2018/19.

T

6.365 Course: Social Choice Theory [T-WIWI-102859]

Responsible: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101500 - Microeconomic Theory](#)
[M-WIWI-101504 - Collective Decision Making](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2520537	Social Choice Theory	2 SWS	Lecture (V)	Puppe
SS 2020	2520539	Übung zu Social Choice Theory	1 SWS	Practice (Ü)	Puppe, Kretz
Exams					
SS 2020	7900312	Social Choice Theory		Prüfung (PR)	Puppe
SS 2020	7900313	Social Choice Theory		Prüfung (PR)	Puppe

Competence Certificate

The assessment consists of a written exam (60 minutes). The exam takes place in every semester.

Prerequisites

None

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

V

Social Choice Theory

2520537, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

How should (political) candidates be elected? What are good ways of merging individual judgments into collective judgments? Social Choice Theory is the systematic study and comparison of how groups and societies can come to collective decisions.

The course offers a rigorous and comprehensive treatment of judgment and preference aggregation as well as voting theory. It is divided into two parts. The first part deals with (general binary) aggregation theory and builds towards a general impossibility result that has the famous Arrow theorem as a corollary. The second part treats voting theory. Among other things, it includes proving the Gibbard-Satterthwaite theorem.

Literature

Main texts:

- Hervé Moulin: Axioms of Cooperative Decision Making, Cambridge University Press, 1988
- Christian List and Clemens Puppe: Judgement Aggregation. A survey, in: Handbook of rational & social choice, P.Anand,P.Pattanaik, C.Puppe (Eds.), Oxford University Press 2009.

Secondary texts:



- Amartya Sen: Collective Choice and Social Welfare, Holden-Day, 1970
- Wulf Gaertner: A Primer in Social Choice Theory, revised edition, Oxford University Press, 2009
- Wulf Gaertner: Domain Conditions in Social Choice Theory, Oxford University Press, 2001




T

6.366 Course: Sociotechnical Information Systems Development [T-WIWI-109249]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104403 - Critical Digital Infrastructures](#)

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

Events					
SS 2020	2512400	Development of Sociotechnical Information Systems (Bachelor)	3 SWS	Practical course (P)	Sunyaev, Sturm
SS 2020	2512401	Development of Sociotechnical Information Systems (Master)	3 SWS	Practical course (P)	Sunyaev, Sturm
WS 20/21	2512400	Practical Course Sociotechnical Information Systems Development (Bachelor)	3 SWS	Practical course (P) / 	Sunyaev, Pandl
WS 20/21	2512401	Practical Course Sociotechnical Information Systems Development (Master)	3 SWS	Practical course (P) / 	Sunyaev, Pandl
Exams					
SS 2020	7900173	Development of Sociotechnical Information Systems (Master)		Prüfung (PR)	Sunyaev

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

Competence Certificate

The alternative exam assessment consists of an implementation and a final thesis documenting the development and use of the application.

Prerequisites

None.

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

V

Development of Sociotechnical Information Systems (Bachelor)

2512400, SS 2020, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)

Content

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

Registration information will be announced on the course page.

V

Development of Sociotechnical Information Systems (Master)

2512401, SS 2020, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)

Content

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

Registration information will be announced on the course page.



Practical Course Sociotechnical Information Systems Development (Bachelor)

2512400, WS 20/21, 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



Practical Course Sociotechnical Information Systems Development (Master)

2512401, WS 20/21, 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

T

6.367 Course: Software Architecture and Quality [T-INFO-101381]**Responsible:** Prof. Dr. Ralf Reussner**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100844 - Software Architecture and Quality](#)
[M-WIWI-104812 - Information Systems: Engineering and Transformation](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	1

Events					
SS 2020	24667	Software Architecture and Quality	2 SWS	Lecture (V)	Reussner
Exams					
SS 2020	7500021	Software Architecture and Quality		Prüfung (PR)	Reussner
WS 20/21	7500032	Software Architecture and Quality		Prüfung (PR)	Reussner

T**6.368 Course: Software Development for Modern, Parallel Platforms [T-INFO-101339]****Responsible:** Prof. Dr. Walter Tichy**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100802 - Software Development for Modern, Parallel Platforms](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	1

T


6.369 Course: Software Engineering II [T-INFO-101370]


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

Organisation: KIT Department of Informatics

Part of: [M-INFO-100833 - Software Engineering II](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 20/21	24076	Software Engineering II	4 SWS	Lecture (V) / 	Reussner
Exams					
SS 2020	7500235	Software Engineering II		Prüfung (PR)	Reussner
WS 20/21	7500054	Software Engineering II		Prüfung (PR)	Reussner
WS 20/21	7500255	Software Engineering II		Prüfung (PR)	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 20/21, 4 SWS, Language: German, [Open in study portal](#)

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

Literature

Craig Larman, Applying UML and Patterns, 3rd edition, Prentice Hall, 2004. Weitere Literaturhinweise werden in der Vorlesung gegeben.

T**6.370 Course: Software Lab Parallel Numerics [T-INFO-105988]**


Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: [M-INFO-102998 - Software Lab Parallel Numerics](#)





Type
Examination of another type

Credits
6

Recurrence
Each term

Version
2

Events					
SS 2020	2424880	Projektorientiertes Softwarepraktikum (Parallele Numerik)	6 SWS	Practical course (P)	Karl, Alefeld, Hoffmann
WS 20/21	2400012	Projektorientiertes Software-Praktikum (Parallele Numerik)	4 SWS	Practical course (P) / 	Karl, Alefeld, Hoffmann, Becker
Exams					
SS 2020	7500188	Lab: Project oriented Software Lab (Parallel Numerics)		Prüfung (PR)	Karl

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


T**6.371 Course: Software Product Line Engineering [T-INFO-111017]**





Responsible: Dr. Thomas Kühn
Prof. Dr. Ralf Reussner

Organisation: KIT Department of Informatics

Part of: [M-INFO-105471 - Software Product Line Engineering](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each winter term	1

Events					
WS 20/21	2402501	Software Product Line Engineering	2 SWS	Lecture (V) / 	Kühn
Exams					
WS 20/21	7502501	Software Product Line Engineering		Prüfung (PR)	Reussner

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

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

V**Software Product Line Engineering**

2402501, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

This module teaches students the methods and techniques for the development and maintenance of multi-variant software systems by means of software product line engineering. The lecture provides an overview of the basic goals, methods, concepts and techniques for the development and maintenance of software product lines.

Organizational issues

https://sdqweb.ipd.kit.edu/wiki/Vorlesung_Software-Produktlinien-Entwicklung_WS_2020/21



6.372 Course: Software Quality Management [T-WIWI-102895]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101477 - Development of Business Information Systems](#)
[M-WIWI-104812 - Information Systems: Engineering and Transformation](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Events					
SS 2020	2511208	Software Quality Management	2 SWS	Lecture (V)	Oberweis
SS 2020	2511209	Übungen zu Software-Qualitätsmanagement	1 SWS	Practice (Ü)	Oberweis, Frister
Exams					
SS 2020	7900031	Software Quality Management (Registration until 13 July 2020)		Prüfung (PR)	Oberweis

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

Prerequisites

None

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



Software Quality Management

2511208, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

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

Learning objectives:

Students

- explain the relevant quality models,
- apply methods to evaluate the software quality and evaluate the results,
- know the main models of software certification, compare and evaluate these models,
- write scientific theses in the area of software quality management and find own solutions for given problems.

Recommendations:

Programming knowledge in Java and basic knowledge of computer science are expected.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

Literature

- Helmut Balzert: Lehrbuch der Software-Technik. Spektrum-Verlag 2008
- Peter Liggesmeyer: Software-Qualität, Testen, Analysieren und Verifizieren von Software. Spektrum Akademischer Verlag 2002
- Mauro Pezzè, Michal Young: Software testen und analysieren. Oldenbourg Verlag 2009

Weitere Literatur wird in der Vorlesung bekanntgegeben.

T

6.373 Course: Software-Evolution [T-INFO-101256]


Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: [M-INFO-100719 - Software-Evolution](#)





Type
Oral examination

Credits
3

Recurrence
Each winter term

Version
1

Events					
WS 20/21	24164	Software Evolution	2 SWS	Lecture (V) / 	Heinrich
Exams					
SS 2020	7500023	Software-Evolution		Prüfung (PR)	Reussner
WS 20/21	7500004	Software-Evolution		Prüfung (PR)	Reussner

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

T

6.374 Course: Spatial Economics [T-WIWI-103107]**Responsible:** Prof. Dr. Ingrid Ott**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-101485 - Transport Infrastructure Policy and Regional Development](#)
[M-WIWI-101496 - Growth and Agglomeration](#)**Type**
Written examination**Credits**
4,5**Recurrence**
Each winter term**Version**
1

Events					
WS 20/21	2561260	Spatial Economics	2 SWS	Lecture (V)	Ott
WS 20/21	2561261		1 SWS	Practice (Ü)	Ott, Bälz
Exams					
SS 2020	7900103	Spatial Economics		Prüfung (PR)	Ott

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Recommendation

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses "Economics I" [2600012], and "Economics II" [2600014]. In addition, an interest in quantitative-mathematical modeling is required. The attendance of the course "Introduction to economic policy" [2560280] is recommended.

Annotation

Due to the research semester of Prof. Dr. Ingrid Ott, the course is not offered in the winter term 2018/19.

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

V

Spatial Economics2561260, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)**Lecture (V)**

Content

The course covers the following topics:

- Geography, trade and development
- Geography and economic theory
- Core models of economic geography and empirical evidence
- Agglomeration, home market effect, and spatial wages
- Applications and extensions

Learning objectives:

The student

- analyses how spatial distribution of economic activity is determined.
- uses quantitative methods within the context of economic models.
- has basic knowledge of formal-analytic methods.
- understands the link between economic theory and its empirical applications.
- understands to what extent concentration processes result from agglomeration and dispersion forces.
- is able to determine theory based policy recommendations.

Recommendations:

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. An interest in mathematical modeling is advantageous.

Workload:

The total workload for this course is approximately 135 hours.

- Classes: ca. 30 h
- Self-study: ca. 45 h
- Exam and exam preparation: ca. 60 h

Assessment:

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Literature

Steven Brakman, Harry Garretsen, Charles van Marrewijk (2009): The New Introduction to Geographical Economics, 2nd ed, Cambridge University Press.

Weitere Literatur wird in der Vorlesung bekanntgegeben.

(Further literature will be announced in the lecture.)

T

6.375 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-101410 - Business & Service Engineering](#)
[M-WIWI-101506 - Service Analytics](#)

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

Exams				
SS 2020	7900224	Special Topics in Information Systems	Prüfung (PR)	Weinhardt

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class.

Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class).

Prerequisites

see below

Recommendation

None

Annotation

All the practical seminars offered at the chair of Prof. Dr. Weinhardt can be chosen in the Special Topics in Information Systems course. The current topics of the practical seminars are available at the following homepage: www.iism.kit.edu/im/lehre


The Special Topics Information Systems is equivalent to the practical seminar, as it was only offered for the major in "Information Management and Engineering" so far. With this course students majoring in "Industrial Engineering and Management" and "Economics Engineering" also have the chance of getting practical experience and enhance their scientific capabilities.





The Special Topics Information Systems can be chosen instead of a regular lecture (see module description). Please take into account, that this course can only be accounted once per module.

T**6.376 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-101638 - Econometrics and Statistics I](#)
[M-WIWI-101639 - Econometrics and Statistics II](#)
[M-WIWI-105414 - Statistics and Econometrics II](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2521350	Statistical Modeling of Generalized Regression Models	2 SWS	Lecture (V) / 	Heller

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.

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 20/21, 2 SWS, [Open in study portal](#)

Lecture (V)
On-Site

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

6.377 Course: Stochastic Calculus and Finance [T-WIWI-103129]

Responsible: Dr. Mher Safarian
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101639 - Econometrics and Statistics II](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2521331	Stochastic Calculus and Finance	2 SWS	Lecture (V) / 	Safarian

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

Competence Certificate

The assessment of this course consists of a written examination (\$4(2), 1 SPOs, 180 min.).

Prerequisites

None

Annotation

For more information see <http://statistik.econ.kit.edu/>

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

V

Stochastic Calculus and Finance

2521331, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

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

Content**Learning objectives:**

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

Content:

The course will provide rigorous yet focused training in stochastic calculus and mathematical finance. Topics to be covered:

1. Stochastic Calculus: Stochastic Processes, Brownian Motion and Martingales, Entropy, Stopping Times, Local martingales, Doob-Meyer Decomposition, Quadratic Variation, Stochastic Integration, Ito Formula, Girsanov Theorem, Jump-diffusion Processes, Stable and Levy processes.
2. Mathematical Finance: Pricing Models, The Black-Scholes Model, State prices and Equivalent Martingale Measure, Complete Markets and Redundant Security Prices, Arbitrage Pricing with Dividends, Term-Structure Models (One Factor Models, Cox-Ingersoll-Ross Model, Affine Models), Term-Structure Derivatives and Hedging, Mortgage-Backed Securities, Derivative Assets (Forward Prices, Future Contracts, American Options, Look-back Options), Incomplete Markets, Markets with Transaction Costs, Optimal Portfolio and Consumption Choice (Stochastic Control and Merton continuous time optimization problem, CAPM), Equilibrium models, Numerical Methods.

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Organizational issues

Blockveranstaltung, Termine werden über Ilias bekannt gegeben

Literature


- Dynamic Asset Pricing Theory, Third Edition by D. Duffie, Princeton University Press, 1996
- Stochastic Calculus for Finance II: Continuous-Time Models by S. E. Shreve, Springer, 2003
- Stochastic Finance: An Introduction in Discrete Time by H. Föllmer, A. Schied, de Gruyter, 2011
- Methods of Mathematical Finance by I. Karatzas, S. E. Shreve, Springer, 1998
- Markets with Transaction Costs by Yu. Kabanov, M. Safarian, Springer, 2010
- Introduction to Stochastic Calculus Applied to Finance by D. Lamberton, B. Lapeyre, Chapman & Hall, 1996





T

6.378 Course: Stochastic Information Processing [T-INFO-101366]

Responsible: Prof. Dr.-Ing. Uwe Hanebeck
Organisation: KIT Department of Informatics
Part of: [M-INFO-100829 - Stochastic Information Processing](#)

Type	Credits	Recurrence	Version
Oral examination	6	Each winter term	1

Events					
WS 20/21	24113	Stochastic Information Processing	3 SWS	Lecture (V) / 	Hanebeck, Frisch
Exams					
SS 2020	7500010	Stochastic Information Processing		Prüfung (PR)	Hanebeck, Noack
WS 20/21	7500031	Stochastic Information Processing		Prüfung (PR)	Hanebeck

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

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

V

Stochastic Information Processing

24113, WS 20/21, 3 SWS, Language: German, [Open in study portal](#)

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

Content

In order to handle complex dynamic systems (e.g., in robotics), an in-step estimation of the system's internal state (e.g., position and orientation of the actuator) is required. Such an estimation is ideally based on the system model (e.g., a discretized differential equation describing the system dynamics) and the measurement model (e.g., a nonlinear function that maps the state space to a measurement subspace). Both system and measurement model are uncertain (e.g., include additive or multiplicative noise).

For continuous state spaces, an exact calculation of the probability densities is only possible in a few special cases. In practice, general nonlinear systems are often traced back to these special cases by simplifying assumptions. One extreme is linearization with subsequent application of linear estimation theory. However, this often leads to unsatisfactory results and requires additional heuristic measures. At the other extreme are numerical approximation methods, which only evaluate the desired distribution densities at discrete points in the state space. Although the working principle of these procedures is usually quite simple, a practical implementation often turns out to be difficult and especially for higher-dimensional systems it is computationally complex.

As a middle ground, analytical nonlinear estimation methods would therefore often be desirable. In this lecture the main difficulties in the development of such estimation methods are presented and corresponding solution modules are presented. Based on these building blocks, some analytical estimation methods are discussed in detail as examples, which are very suitable for practical implementation and offer a good compromise between computing effort and performance. Useful applications of these estimation methods are also discussed. Both known methods and the results of current research are presented.

Organizational issues

Der Prüfungstermin ist per E-Mail (gambichler@kit.edu) zu vereinbaren.

Literature**Weiterführende Literatur**

Skript zur Vorlesung

T**6.379 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-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

Type	Credits	Recurrence	Version
Written examination	1,5	Each summer term	1

Exams				
SS 2020	7900268	Strategic Finance and Technoloy Change	Prüfung (PR)	Ruckes
WS 20/21	7900219	Strategic Finance and Technoloy Change	Prüfung (PR)	Ruckes

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. The exam is offered each semester. If there are only a small number of participants registered for the exam, we reserve the right to hold an oral examination instead of a written one.

Prerequisites

None


Recommendation





Attending the lecture "Financial Management" is strongly recommended.

T**6.380 Course: Strategic Foresight China [T-WIWI-110986]**

Responsible: Prof. Dr. Marion Weissenberger-Eibl
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each winter term	1

Events					
WS 20/21	2545110	Strategische Vorausschau am Praxisbeispiel China	2 SWS	Seminar (S) / 	Heine

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

Competence Certificate

Alternative exam assessment.

Recommendation

Prior attendance of the course Innovation Management [2545015] is recommended.

T

6.381 Course: Strategic Management of Information Technology [T-WIWI-102669]

Responsible: Prof. Dr. Thomas Wolf
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101477 - Development of Business Information Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Exams				
SS 2020	7900034	Strategic Management of Information Technology (Registration until 13 July 2020)	Prüfung (PR)	Wolf

Competence Certificate

Please note that the exam for first writers will be offered for the last time in winter semester 2019/2020. A last examination possibility exists in the summer semester 2020 (only for repeaters).

The assessment of this course is a written (60 min.) or (if necessary) oral examination according (30 min.) to §4(2) of the examination regulation.

Prerequisites

None

T**6.382 Course: Strategy and Management Theory: Developments and "Classics" [T-WIWI-106190]**


Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103119 - Advanced Topics in Strategy and Management](#)





Type
Examination of another type

Credits
3

Recurrence
Irregular

Version
1

Events					
SS 2020	2577921	Strategy and Management Theory: Developments and "Classics" (Master)	2 SWS	Seminar (S)	Lindstädt
WS 20/21	2577921	Workshop aktuelle Themen Strategie und Management (Master)	2 SWS	Seminar (S) / 	Lindstädt
Exams					
SS 2020	7900269	Strategy and Management Theory: Developments and "Classics"		Prüfung (PR)	Lindstädt

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

Competence Certificate

The control of success according to § 4(2), 3 SPO takes place by writing a scientific work and a presentation of the results of the work in the context of a conclusion meeting. Details on the design of the performance review will be announced during the lecture.

Prerequisites

None

Recommendation

Basic knowledge as conveyed in the bachelor module „Strategy and Organization“ is recommended.

Annotation

This course is admission restricted. If you were already admitted to another course in the module “Advanced Topics in Strategy and Management” the participation at this course will be guaranteed.

The course is planned to be held for the first time in the winter term 2017/18.

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

V**Strategy and Management Theory: Developments and "Classics" (Master)**

2577921, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content

In this lecture, students discuss and evaluate models in the field of strategic management with a focus on applicability and theory based limitations. Critical examination of current research results will be a substantial part of this course.

Learning Objectives:

Students

- are able to explain and evaluate theoretical approaches and models in the field of strategic management and can illustrate them by tangible examples
- learn to express their position in structured discussions

Recommendations:

Basic knowledge as conveyed in the bachelor module "Strategy and Organization" is recommended.

Workload:

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

Assessment:

The control of success according to § 4(2), 3 SPO takes place by writing a scientific work and a presentation of the results of the work in the context of a final meeting. Details on the design of the success control will be announced during the lecture.

Note:

This course is admission restricted. If you were already admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed. Further information on the application process can be found on the IBU website.

The examinations are offered at least every second semester, so that the entire module can be completed in two semesters.

Organizational issues

siehe Homepage

**Workshop aktuelle Themen Strategie und Management (Master)**

2577921, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

In this lecture, students discuss and evaluate models in the field of strategic management with a focus on applicability and theory based limitations. Critical examination of current research results will be a substantial part of this course.

Learning Objectives:

Students

- are able to explain and evaluate theoretical approaches and models in the field of strategic management and can illustrate them by tangible examples
- learn to express their position in structured discussions

Recommendations:

Basic knowledge as conveyed in the bachelor module "Strategy and Organization" is recommended.

Workload:

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

Assessment:

The control of success according to § 4(2), 3 SPO takes place by writing a scientific work and a presentation of the results of the work in the context of a final meeting. Details on the design of the success control will be announced during the lecture.

Note:

This course is admission restricted. If you were already admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed. Further information on the application process can be found on the IBU website.

The examinations are offered at least every second semester, so that the entire module can be completed in two semesters.

Organizational issues

siehe Homepage

4 Blöcke mittwochs nachmittags

T**6.383 Course: Subdivision Algorithms [T-INFO-103551]**

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101863 - Subdivision Algorithms](#)

Type	Credits	Recurrence	Version
Oral examination	3	Irregular	1

T**6.384 Course: Subdivision Algorithms [T-INFO-103550]**

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101864 - Subdivision Algorithms](#)

Type
Oral examination

Credits
5

Recurrence
Irregular

Version
1

Exams				
SS 2020	7500143	Subdivision Algorithms	Prüfung (PR)	Prautzsch

T**6.385 Course: Supplement Enterprise Information Systems [T-WIWI-110346]**

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101477 - Development of Business Information Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each term	1

Competence Certificate

The assessment of this course is a written examination (60 min.) or (if necessary) oral examination (30 min.) according to §4(2) of the examination regulation.

Prerequisites

None


T**6.386 Course: Supply Chain Management in the Automotive Industry [T-WIWI-102828]**





Responsible: Tilman Heupel
Hendrik Lang

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101412 - Industrial Production III](#)
[M-WIWI-101471 - Industrial Production II](#)

Type	Credits	Recurrence	Version
Written examination	3,5	Each winter term	1

Events					
WS 20/21	2581957	Supply Chain Management in the automotive industry	2 SWS	Lecture (V) / 	Lang, Heupel
Exams					
SS 2020	7981957	Supply Chain Management in the Automotive Industry	Prüfung (PR)		Schultmann

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

Competence Certificate

The examination will be in form of a written exam acc. to §4(2), 1 ER. Exams are offered in every semester and can be re-examined at every ordinary examination date.

Prerequisites

None

Recommendation

None

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

V**Supply Chain Management in the automotive industry**

2581957, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

- Automotive industry significance
- The automotive supply chain
- Adding value structures of the automotive supply chain and mastering of the production systems as factors of success in the SCM
- Strategic procurement logistics
- Risk management
- Quality engineering and management in the automotive supply chain
- Cost engineering and management in the automotive supply chain
- Purchasing (Supplier selection, contract management)
- Performance measurement of the supply chain
- Organization

Literature

Wird in der Veranstaltung bekannt gegeben.

T**6.387 Course: Supply Chain Management with Advanced Planning Systems [T-WIWI-102763]**

Responsible: Claus J. Bosch
Dr. Mathias Göbelt

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101412 - Industrial Production III](#)
[M-WIWI-101471 - Industrial Production II](#)

Type	Credits	Recurrence	Version
Written examination	3,5	Each summer term	1

Events					
SS 2020	2581961	Supply Chain Management with Advanced Planning Systems	2 SWS	Lecture (V)	Göbelt, Bosch
Exams					
SS 2020	7981961	Supply Chain Management with Advanced Planning Systems		Prüfung (PR)	Schultmann

Competence Certificate

The assessment consists of an oral (30 minutes) or a written (60 minutes) exam (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

None

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

V**Supply Chain Management with Advanced Planning Systems**2581961, SS 2020, 2 SWS, Language: English, [Open in study portal](#)**Lecture (V)**

Content

This lecture deals with supply chain management from a practitioner's perspective with a special emphasis Advanced Planning Systems (APS) and the planning domain. The software solution SAP SCM, one of the most widely used Advanced Planning Systems, is used as an example to show functionality and application of an APS in practice.

First, the term supply chain management is defined and its scope is determined. Methods to analyze supply chains as well as indicators to measure supply chains are derived. Second, the structure of an APS (advanced planning system) is discussed in a generic way. Later in the lecture, the software solution SAP SCM is mapped to this generic structure. The individual planning tasks and software modules (demand planning, supply network planning / sales & operations planning, production planning / detailed scheduling, deployment, transportation planning, global available-to-promise) are presented by discussing the relevant business processes, providing academic background, describing typical planning processes and showing the user interface and user-related processes in the software solution. At the end of the lecture, implementation methodologies and project management approaches for SAP SCM are covered.

Contents**1. Introduction to Supply Chain Management**

- 1.1. Supply Chain Management Fundamentals
- 1.2. Supply Chain Management Analytics

2. Structure of Advanced Planning Systems**3. SAP SCM**

- 3.1. Introduction / SCM Solution Map
- 3.2. Demand Planning
- 3.3. Supply Network Planning / Sales & Operations Planning
- 3.4. Production Planning and Detailed Scheduling
- 3.5. Deployment
- 3.6. Transportation Planning / Global Available to Promise
- 3.7. Cloud-based Supply Chain Planning

4. SAP SCM in Practice

- 4.1. Project Management and Implementation
- 4.2. SAP Implementation Methodology

Literature

will be announced in the course

T

6.388 Course: Symmetric Encryption [T-INFO-101390]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: [M-INFO-100853 - Symmetric Encryption](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	1

Events					
SS 2020	24629	Symmetric encryption	2 SWS	Lecture (V)	Müller-Quade, Geiselmann
Exams					
SS 2020	7500070	Symmetric Encryption		Prüfung (PR)	Geiselmann, Müller-Quade
SS 2020	7500328	Symmetric Encryption		Prüfung (PR)	Geiselmann, Müller-Quade

Competence Certificate

Es wird empfohlen, das Modul Sicherheit zu belegen.

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

V

Symmetric encryption

24629, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)



6.389 Course: Tax Law I [T-INFO-101315]

Responsible: Detlef Dietrich
Organisation: KIT Department of Informatics
Part of: [M-INFO-101216 - Private Business Law](#)

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	1

Events					
WS 20/21	24168	Tax Law I	2 SWS	Lecture (V) /	Dietrich
Exams					
SS 2020	7500052	Tax Law I		Prüfung (PR)	Dreier, Matz
SS 2020	7500285	Tax Law I		Prüfung (PR)	Dreier, Matz

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



6.390 Course: Tax Law II [T-INFO-101314]

Responsible: Detlef Dietrich
Organisation: KIT Department of Informatics
Part of: [M-INFO-101216 - Private Business Law](#)

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	1

Events					
SS 2020	24646	Tax Law II	2 SWS	Lecture (V)	Dietrich
Exams					
SS 2020	7500053	Tax Law II		Prüfung (PR)	Dreier, Matz
SS 2020	7500288	Tax Law II		Prüfung (PR)	Dreier, Matz

**6.391 Course: Technologies for Innovation Management [T-WIWI-102854]**

Responsible: Dr. Daniel Jeffrey Koch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each winter term	2

Events					
WS 20/21	2545106	Technologies for Innovation Management	2 SWS	Seminar (S) /	Koch

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

Competence Certificate

Presentation and individual paper (ca. 15 pages) as alternative exam assessment.

Prerequisites

None

Recommendation

Prior attendance of the course Innovationsmanagement: Konzepte, Strategien und Methoden is recommended.

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

**Technologies for Innovation Management**

2545106, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

The seminar "Technologies for Innovation Management" will focus on the early phase or fuzzy front end in innovation management. Technologies can be of great importance here, above all in the supply of information. In globally distributed R & D organizations, it is necessary to collect as much information as possible on new technological developments in the early phase of the innovation process. Information and communication technologies can be supported.

Literature

Werden in der ersten Veranstaltung bekannt gegeben.

T

6.392 Course: Technology Assessment [T-WIWI-102858]

Responsible: Dr. Daniel Jeffrey Koch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	see Annotations	1

Exams				
SS 2020	7900238	Technology Assessment	Prüfung (PR)	Weissenberger-Eibl

Competence Certificate

Alternative exam assessment.

Prerequisites

None

Recommendation

Prior attendance of the course Innovation Management is recommended.

Annotation

See German version.

T

6.393 Course: Telecommunication and Internet Economics [T-WIWI-102713]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101406 - Network Economics](#)
[M-WIWI-101409 - Electronic Markets](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Exams				
SS 2020	7900221	Telecommunication and Internet Economics	Prüfung (PR)	Mitusch
SS 2020	7900327	Telecommunication and Internet Economics	Prüfung (PR)	Mitusch

Competence Certificate

Result of success is made by a 60 minutes written examination during the semester break (according to §4(2), 1 ERSC).
 Examination is offered every semester and can be retried at any regular examination date.

Prerequisites

None

Recommendation

Basic knowledge and skills of microeconomics from undergraduate studies (bachelor's degree) are expected.

Particularly helpful but not necessary: Industrial Economics. Prior attendance of the lecture „Competition in Networks“ [26240] or "Industrial Organisation" is helpful in any case but not considered a formal precondition. The english taught course "Communications Economics" is complementary and recommendet for anyone interested in the sector.

Annotation

Due to the research semester of Prof. Mitusch the course for partial performance will not be offered in the winter semester 2020/2021. An examination will be offered in each semester.

T**6.394 Course: Telecommunications Law [T-INFO-101309]**

Responsible: Dr. Yoan Hermstrüwer
Organisation: KIT Department of Informatics
Part of: [M-INFO-101217 - Public Business Law](#)

Type
Written examination

Credits
3

Recurrence
Each summer term

Version
1

Events					
SS 2020	24632	Telekommunikationsrecht	2 SWS	Lecture (V)	Hermstrüwer
Exams					
SS 2020	7500085	Telecommunications Law		Prüfung (PR)	Eichenhofer
SS 2020	7500292	Telecommunications Law		Prüfung (PR)	Eichenhofer



6.395 Course: Telematics [T-INFO-101338]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [M-INFO-100801 - Telematics](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 20/21	24128	Telematics	3 SWS	Lecture (V) /	Bauer, Friebe, Heseding, Hock, Zitterbart
Exams					
SS 2020	7500115	Telematics		Prüfung (PR)	Zitterbart

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

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



Telematics

24128, WS 20/21, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

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. 4rd 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

6.396 Course: Testing Digital Systems I [T-INFO-101388]

Responsible: Prof. Dr. Mehdi Baradaran Tahoori

Organisation: KIT Department of Informatics

Part of: [M-INFO-100851 - Testing Digital Systems I](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	1

Exams				
SS 2020	7500008	Testing Digital Systems I	Prüfung (PR)	Tahoori
WS 20/21	7500039	Testing Digital Systems I	Prüfung (PR)	Tahoori

T

6.397 Course: Testing Digital Systems II [T-INFO-105936]

Responsible: Prof. Dr. Mehdi Baradaran Tahoori
Organisation: KIT Department of Informatics
Part of: [M-INFO-102962 - Testing Digital Systems II](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	1

Events					
SS 2020	2400014	Testing Digital Systems II	2 SWS	Lecture (V)	Tahoori
Exams					
SS 2020	7500069	Testing Digital Systems II		Prüfung (PR)	Tahoori
WS 20/21	7500147	Testing Digital Systems II		Prüfung (PR)	Tahoori

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

V

Testing Digital Systems II

2400014, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

T

6.398 Course: The negotiation of open innovation [T-WIWI-110867]

Responsible: Dr. Daniela Beyer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Once	1

Events					
SS 2020	2545105	Negotiating Open Innovation	2 SWS	Seminar (S)	Beyer
Exams					
SS 2020	7900017	Die Aushandlung von Open Innovation		Prüfung (PR)	Weissenberger-Eibl

Competence Certificate

Non exam assessment.

The following aspects are included in the evaluation:

- Exposé of the seminar paper (15%)
- Preparation of the methodology (15%) (interview guide, quantitative survey, etc.)
- informed participation and preparation of the simulation game (20%)
- written elaboration (50%).

Prerequisites

None

Recommendation

Prior attendance of the course Innovation Management [2545015] is recommended.

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

V

Negotiating Open Innovation

2545105, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content

In times of great challenges, it is no longer sufficient for individual experts to be responsible for innovation success. This is precisely why there is currently so much hype surrounding the topic of Open Innovation. The exchange of knowledge within and between organizations is crucial, but requires the right attitudes and decisions. This seminar examines how this can be achieved in the best possible way, depending on the objectives. By visiting two practitioners from science-economics cooperations and the company's own Startup Accelerator Programme, theory and practice are linked. Furthermore, a simulation game will take place in the last session, in which the learned will be applied. The grading is based on a group seminar work, which requires an empirical analysis and the preparation of this in the course of the semester (expose, preparation of the methodology) as well as well-informed participation.

T

6.399 Course: Theory of Endogenous Growth [T-WIWI-102785]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101478 - Innovation and Growth](#)
[M-WIWI-101496 - Growth and Agglomeration](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2561503	Theory of endogenous growth	2 SWS	Lecture (V)	Ott
WS 20/21	2561504		1 SWS	Practice (Ü)	Ott, Eraydin
Exams					
SS 2020	7900105	Theory of Endogenous Growth		Prüfung (PR)	Ott

Competence Certificate

The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Students will be given the opportunity of writing and presenting a short paper during the lecture time to achieve a bonus on the exam grade. If the mandatory credit point exam is passed, the awarded bonus points will be added to the regular exam points. A deterioration is not possible by definition, and a grade does not necessarily improve, but is very likely to (not every additional point improves the total number of points, since a grade can not become better than 1). The voluntary elaboration of such a paper can not countervail a fail in the exam.

Prerequisites

None

Recommendation

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

Annotation

Due to the research semester of Prof. Dr. Ingrid Ott, the course is not offered in the winter term 2018/19.

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

V

Theory of endogenous growth

2561503, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

Lecture (V)

Content

This course is intended as an introduction to the field of advanced macroeconomics with a special focus on economic growth. Lectures aim to deal with the theoretical foundations of exogenous and endogenous growth models. The importance of growth for nations and discussion of some (well-known) growth theories together with the role of innovation, human capital and environment will therefore be primary focuses of this course.

Learning objective:

Students shall be given the ability to understand, analyze and evaluate selected models of endogenous growth theory.

Course content:

- Intertemporal consumption decision
- Growth models with exogenous saving rates: Solow
- Growth models with endogenous saving rates: Ramsey
- Growth and environmental resources
- Basic models of endogenous growth
- Human capital and economic growth
- Modelling of technological progress
- Diversity Models
- Schumpeterian growth
- Directional technological progress
- Diffusion of technologies

Recommendations:

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

Workload:

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

Exam description:

The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Students will be given the opportunity of writing and presenting a short paper during the lecture time to achieve a bonus on the exam grade. If the mandatory credit point exam is passed, the awarded bonus points will be added to the regular exam points. A deterioration is not possible by definition, and a grade does not necessarily improve, but is very likely to (not every additional point improves the total number of points, since a grade can not become better than 1). The voluntary elaboration of such a paper can not countervail a fail in the exam.

Literature**Auszug:**

- Acemoglu, D. (2009): Introduction to modern economic growth. Princeton University Press, New Jersey.
- Aghion, P., Howitt, P. (2009): Economics of growth, MIT-Press, Cambridge/MA.
- Barro, R.J., Sala-i-Martin, X. (2003): Economic Growth. MIT-Press, Cambridge/MA.
- Sydsaeter, K., Hammond, P. (2008): Essential mathematics for economic analysis. Prentice Hall International, Harlow.
- Sydsaeter, K., Hammond, P., Seierstad, A., Strom, A., (2008): Further Mathematics for Economic Analysis, Second Edition, Pearson Education Limited, Essex.

T

6.400 Course: Topics in Experimental Economics [T-WIWI-102863]

Responsible: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101505 - Experimental Economics](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

Events					
SS 2020	2560232	Topics in Experimental Economics	2 SWS	Lecture (V)	Reiß
SS 2020	25602333	Übungen zu Topics in Experimental Economics	1 SWS	Practice (Ü)	Reiß
Exams					
SS 2020	7900320	Topics in Experimental Economics		Prüfung (PR)	Reiß

Competence Certificate

The assessment consists of a written exam (following §4(2), 1 of the examination regulation).

Prerequisites

None

Recommendation

Basic knowledge of Experimental Economics is assumed. Therefore, it is strongly recommended to attend the course Experimental Economics beforehand.

Annotation

The course is offered in summer 2020 for the next time, not in summer 2018.

T**6.401 Course: Trademark and Unfair Competition Law [T-INFO-101313]**

Responsible: Dr. Yvonne Matz
Organisation: KIT Department of Informatics
Part of: [M-INFO-101215 - Intellectual Property Law](#)





Type
Written examination

Credits
3

Recurrence
Each term

Version
1

Events					
WS 20/21	24136	Trademark and Unfair Competition Law	2 SWS	Lecture (V) / 	Matz
Exams					
SS 2020	7500051	Trademark and Unfair Competition Law	Prüfung (PR)		Dreier, Matz

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

T

6.402 Course: Transport Economics [T-WIWI-100007]

Responsible: Prof. Dr. Kay Mitusch
Dr. Eckhard Szimba

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101406 - Network Economics](#)
[M-WIWI-101468 - Environmental Economics](#)
[M-WIWI-101485 - Transport Infrastructure Policy and Regional Development](#)

Type
Written examination

Credits
4,5

Recurrence
Each summer term

Version
1

Events					
SS 2020	2560230	Transport Economics	SWS	Lecture (V)	Mitusch, Szimba
SS 2020	2560231	Übung zu Transportökonomie	SWS	Practice (Ü)	Mitusch, Szimba, Wisotzky
Exams					
SS 2020	7900275	Transport Economics		Prüfung (PR)	Mitusch
SS 2020	7900332	Transport Economics		Prüfung (PR)	Mitusch

Competence Certificate

The assessment 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.

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

V

Transport Economics

2560230, SS 2020, SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature**Literatur:**

Aberle, G: Transportwirtschaft: einzelwirtschaftliche und gesamtwirtschaftliche Grundlagen München; Wien: Oldenbourg, 2003.

Blauwens, G., De Baere, P. and Van der Voorde, E. (2006): Transport Economics.

Frerich, J; Müller, G: Europäische Verkehrspolitik, Landverkehrspolitik München; Wien: Oldenbourg, 2004.

Dasgupta, A, Pearce, D (1972): Cost-Benefit Analysis, MacMillan, London.

Europäische Kommission (2008): Guide to Cost Benefit Analysis of Investment Projects, online unter [Ortúzar, J. d. D. and Willumsen, L. \(1990\): Modelling Transport.](http://ec.europa.eu/regional_policy/sources/Ben-Akiva, M., Meerseman, H., and Van de Voorde, E. (2008): Recent developments in transport modelling: Lessons for the freight sector.</p>
</div>
<div data-bbox=)

T


6.403 Course: Ubiquitous Computing [T-INFO-101326]





Responsible: Prof. Dr.-Ing. Michael Beigl

Organisation: KIT Department of Informatics

Part of: [M-INFO-100789 - Ubiquitous Computing](#)
[M-WIWI-101458 - Ubiquitous Computing](#)
[M-WIWI-104814 - Information Systems: Analytical and Interactive Systems](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each winter term	1

Events					
WS 20/21	24146	Ubiquitäre Informationstechnologien	2+1 SWS	Lecture / Practice (VÜ) / 	Beigl
Exams					
SS 2020	7500122	Ubiquitous Computing		Prüfung (PR)	Beigl
SS 2020	7500122_02-06	Ubiquitous Computing		Prüfung (PR)	Beigl
SS 2020	7500122_14-09	Ubiquitous Computing		Prüfung (PR)	Beigl
SS 2020	7500122_16-06	Ubiquitous Computing		Prüfung (PR)	Beigl



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





T

6.404 Course: Valuation [T-WIWI-102621]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101482 - Finance 1](#)
[M-WIWI-101483 - Finance 2](#)
[M-WIWI-101510 - Cross-Functional Management Accounting](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 20/21	2530212	Valuation	2 SWS	Lecture (V) / 	Ruckes
WS 20/21	2530213	Übungen zu Valuation	1 SWS	Practice (Ü) / 	Ruckes, Luedecke
Exams					
SS 2020	7900072	Valuation		Prüfung (PR)	Ruckes
WS 20/21	7900057	Valuation		Prüfung (PR)	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

Valuation

2530212, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)
Online**

Content

Firms prosper when they create value for their shareholders and stakeholders. This is achieved by investing in projects that yield higher returns than their according cost of capital. Students are told the basic tools for firm and project valuation as well as ways to implement these tools in order to enhance a firm's value and improve its investment decisions. Among other things, the course will deal with the valuation of firms and individual projects using discounted cash flow and relative valuation approaches and the valuation of flexibility deploying real options.

Topics:

- Projections of cash flows
- Estimation of the cost of capital
- Valuation of the firm
- Mergers and acquisitions
- Real options

Learning outcomes: Students are able to

- evaluate complex investment projects by taking a financial view,
- value firms,
- assess the advantageousness of potential merger and acquisitions.

Literature**Weiterführende Literatur**

Titman/Martin (2013): *Valuation - The Art and Science of Corporate Investment Decisions*, 2nd. ed. Pearson International.

T

6.405 Course: Visualization [T-INFO-101275]

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher

Organisation: KIT Department of Informatics

Part of: [M-INFO-100738 - Visualization](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each summer term	1

Events					
SS 2020	2400175	Visualisierung	2 SWS	Lecture (V)	Rapp, Dachsbacher
WS 20/21	24183	Visualisation	2 SWS	Lecture (V)	Dachsbacher
Exams					
SS 2020	7500193	Visualization		Prüfung (PR)	Dachsbacher

T

6.406 Course: Wearable Robotic Technologies [T-INFO-106557]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Prof. Dr.-Ing. Michael Beigl

Organisation: KIT Department of Informatics

Part of: [M-INFO-103294 - Wearable Robotic Technologies](#)

Type	Credits	Recurrence	Version
Written examination	4	Each summer term	3

Events					
SS 2020	2400062	Wearable Robotic Technologies	2 SWS	Lecture (V)	Asfour, Beigl
Exams					
SS 2020	7500219	Wearable Robotic Technologies		Prüfung (PR)	Asfour
WS 20/21	7500073	Wearable Robotic Technologies		Prüfung (PR)	Asfour

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

V

Wearable Robotic Technologies

2400062, SS 2020, 2 SWS, Language: German/English, [Open in study portal](#)

Lecture (V)

Content

The lecture starts with an overview of wearable robot technologies (exoskeletons, prostheses and orthoses) and its potentials, followed by the basics of wearable robotics. In addition to different approaches to the design of wearable robots and their related actuator and sensor technology, the lecture focuses on modeling the neuromusculoskeletal system of the human body and the physical and cognitive human-robot interaction for tightly coupled hybrid human-robot systems. Examples of current research and various applications of lower, upper and full body exoskeletons as well as prostheses are presented.

Learning Objectives:

The students have received fundamental knowledge about wearable robotic technologies and understand the requirements for the design, the interface to the human body and the control of wearable robots. They are able to describe methods for modelling the human neuromusculoskeletal system, the mechatronic design, fabrication and composition of interfaces to the human body. The students understand the symbiotic human-machine interaction as a core topic of Anthropomatics and have knowledge of state of the art examples of exoskeletons, orthoses and prostheses.

Organizational issues

Die Erfolgskontrolle erfolgt in Form einer schriftlichen Prüfung im Umfang von i.d.R. 60 Minuten nach § 4 Abs. 2 Nr. 1 SPO.

Modul für Master Maschinenbau, Mechatronik und Informationstechnik, Elektrotechnik und Informationstechnik, Sportwissenschaften

Voraussetzungen: Der Besuch der Vorlesung *Mechano-Informatik in der Robotik* wird vorausgesetzt

Arbeitsaufwand: 120h

Literature

Vorlesungsfolien und ausgewählte aktuelle Literaturangaben werden in der Vorlesung bekannt gegeben und als pdf unter <http://www.humanoids.kit.edu> verfügbar gemacht.

T**6.407 Course: Web App Programming for Finance [T-WIWI-110933]**

Responsible: Jun.-Prof. Dr. Julian Thimme
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Once	1

Competence Certificate

Non exam assessment according to § 4 paragraph 3 of the examination regulation. (Anmerkung: gilt nur für SPO 2015). The grade is made up as follows: 50% result of the project (R-code), 50% presentation of the project.

Prerequisites

None

Recommendation

The content of the bachelor course Investments is assumed to be known and necessary to follow the course.

T**6.408 Course: Web Applications and Service-Oriented Architectures (II) [T-INFO-101271]****Responsible:** Prof. Dr. Sebastian Abeck**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100734 - Web Applications and Service-Oriented Architectures \(II\)](#)
[M-WIWI-104812 - Information Systems: Engineering and Transformation](#)

Type	Credits	Recurrence	Version
Oral examination	4	Each summer term	1

Events					
SS 2020	24677	Web Applications and Service oriented Architectures (II)	2 SWS	Lecture (V)	Abeck, Schneider
Exams					
SS 2020	7500138	Web Applications and Service-oriented Architectures (II)		Prüfung (PR)	Abeck

T

6.409 Course: Web Science [T-WIWI-103112]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101455 - Web Data Management](#)
[M-WIWI-105368 - Web and Data Science](#)

Type	Credits	Recurrence	Version
Written examination	4,5	see Annotations	2

Exams				
SS 2020	7900032	Web Science (Registration until 13 July 2020)	Prüfung (PR)	Sure-Vetter

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 (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

Annotation

The lecture will not be offered in the winter semester 2020/2021, but the examination will take place regularly.

T**6.410 Course: Workshop Business Wargaming – Analyzing Strategic Interactions [T-WIWI-106189]**

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103119 - Advanced Topics in Strategy and Management](#)





Type
Examination of another type

Credits
3

Recurrence
Irregular

Version
1

Events					
WS 20/21	2577922	Workshop Business Wargaming - Analyse strategischer Interaktionen (Master)	2 SWS	Seminar (S) / 	Lindstädt
Exams					
WS 20/21	7900172	Workshop Business Wargaming – Analyzing Strategic Interactions		Prüfung (PR)	Lindstädt

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

Competence Certificate

In this course, real conflict situations are simulated and analyzed using various methods from business wargaming. Details on the design of the performance review will be announced during the lecture.

Prerequisites

None

Recommendation

Basic knowledge as conveyed in the bachelor module „Strategy and Organization“ is recommended.

Annotation

This course is admission restricted. If you were already admitted to another course in the module “Advanced Topics in Strategy and Management” the participation at this course will be guaranteed.

The course is planned to be held for the first time in the summer term 2018.

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

V**Workshop Business Wargaming - Analyse strategischer Interaktionen (Master)**

2577922, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

In this lecture, current economic trends will be discussed from a perspective of competition analysis and corporate strategies. Using appropriate frameworks, the students will be able to analyze collectively selected case studies and derive business strategies.

Learning Objectives:

Students

- are able to analyze business strategies and derive recommendations for the management
- learn to express their position through compelling reasoning in structured discussions

Recommendations:

Basic knowledge as conveyed in the bachelor module "Strategy and Organization" is recommended.

Workload:

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

Assessment:

In this course, real conflict situations are simulated and analyzed using various methods from business wargaming. Details on the design of the success control will be announced during the lecture.

Note:

This course is admission restricted. If you were already admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed. Further information on the application process can be found on the IBU website.

The examinations are offered at least every second semester, so that the entire module can be completed in two semesters.

Organizational issues

4 Blöcke mittwochs nachmittags

siehe Institutshomepage

T**6.411 Course: Workshop Current Topics in Strategy and Management [T-WIWI-106188]**


Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103119 - Advanced Topics in Strategy and Management](#)

Type
Examination of another type

Credits
3

Recurrence
Irregular

Version
1

Events					
SS 2020	2577923	Workshop aktuelle Themen Strategie und Management (Master)	2 SWS	Seminar (S)	Lindstädt
WS 20/21	2577923	Workshop aktuelle Themen Strategie und Management (Master)	2 SWS	Seminar (S) / 	Lindstädt
Exams					
SS 2020	7900122	Workshop Current Topics in Strategy and Management		Prüfung (PR)	Lindstädt
WS 20/21	7900171	Workshop Current Topics in Strategy and Management		Prüfung (PR)	Lindstädt

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

Competence Certificate

The evaluation of the performance takes place through the active participation in the discussion rounds; an appropriate preparation is expressed here and a clear understanding of the topic and framework becomes recognizable. Further details on the design of the performance review will be announced during the lecture.

Prerequisites

None

Recommendation

Basic knowledge as conveyed in the bachelor module „Strategy and Organization“ is recommended.

Annotation

This course is admission restricted. If you were already admitted to another course in the module “Advanced Topics in Strategy and Management” the participation at this course will be guaranteed.

The course is planned to be held for the first time in the winter term 2017/18.

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

V**Workshop aktuelle Themen Strategie und Management (Master)**

2577923, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content

In this lecture, students discuss and evaluate models in the field of strategic management with a focus on applicability and theory based limitations. Critical examination of current research results will be a substantial part of this course.

Learning Objectives:

Students

- are able to explain and evaluate theoretical approaches and models in the field of strategic management and can illustrate them by tangible examples
- learn to express their position in structured discussions

Recommendations:

Basic knowledge as conveyed in the bachelor module "Strategy and Organization" is recommended.

Workload:

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

Assessment:

The assessment of performance is made through active participation in the discussion rounds; adequate preparation is expressed here and a clear understanding of the topic and framework becomes evident. Further details on the design of the success control will be announced during the lecture.

Note:

This course is admission restricted. If you were already admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed. Further information on the application process can be found on the IBU website.

The examinations are offered at least every second semester, so that the entire module can be completed in two semesters.

Organizational issues

Geb 05.20, R 2A-12.1 IBU, mittwochs tba

**Workshop aktuelle Themen Strategie und Management (Master)**

2577923, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

In this lecture, students discuss and evaluate models in the field of strategic management with a focus on applicability and theory based limitations. Critical examination of current research results will be a substantial part of this course.

Learning Objectives:

Students

- are able to explain and evaluate theoretical approaches and models in the field of strategic management and can illustrate them by tangible examples
- learn to express their position in structured discussions

Recommendations:

Basic knowledge as conveyed in the bachelor module "Strategy and Organization" is recommended.

Workload:

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

Assessment:

The assessment of performance is made through active participation in the discussion rounds; adequate preparation is expressed here and a clear understanding of the topic and framework becomes evident. Further details on the design of the success control will be announced during the lecture.

Note:

This course is admission restricted. If you were already admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed. Further information on the application process can be found on the IBU website.

The examinations are offered at least every second semester, so that the entire module can be completed in two semesters.

Organizational issues

mittwochs tba