

# Module Handbook Digital Economics (Master of Science (M.Sc.))

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KIT DEPARTMENT OF ECONOMICS AND MANAGEMENT



## Table Of Contents

<b>1. General information</b>	<b>8</b>
1.1. Structural elements	8
1.2. Begin and completion of a module	8
1.3. Module versions	8
1.4. General and partial examinations	8
1.5. Types of examinations	8
1.6. Repeating examinations	9
1.7. Examiners	9
1.8. Additional accomplishments	9
1.9. Further information	9
1.10. Contact	9
<b>2. Study plan</b>	<b>10</b>
<b>3. Qualification objectives of the Master's program in Digital Economics</b>	<b>11</b>
<b>4. Key Skills</b>	<b>12</b>
<b>5. Field of study structure</b>	<b>13</b>
5.1. Master's Thesis	13
5.2. Economics	13
5.3. Methods	13
5.4. Society	13
5.5. Electives	14
<b>6. Modules</b>	<b>17</b>
6.1. Advanced Machine Learning and Data Science - M-WIWI-105659	17
6.2. Advanced Topics in Public Finance - M-WIWI-101511	18
6.3. Advanced Topics in Strategy and Management - M-WIWI-103119	19
6.4. Agglomeration and Innovation - M-WIWI-101497	20
6.5. Analytics and Statistics - M-WIWI-101637	21
6.6. Applied Strategic Decisions - M-WIWI-101453	22
6.7. Business & Service Engineering - M-WIWI-101410	23
6.8. Collective Decision Making - M-WIWI-101504	24
6.9. Computation & Optimization - M-WIWI-106412	25
6.10. Consumer Research - M-WIWI-105714	26
6.11. Cross-Functional Management Accounting - M-WIWI-101510	27
6.12. Data Science: Data-Driven Information Systems - M-WIWI-103117	28
6.13. Data Science: Evidence-based Marketing - M-WIWI-101647	30
6.14. Data Science: Intelligent, Adaptive, and Learning Information Services - M-WIWI-105661	31
6.15. Designing Interactive Information Systems - M-WIWI-104080	32
6.16. Digital Economics - M-WIWI-106408	33
6.17. Digital Financial Economics - M-WIWI-106409	34
6.18. Digital Marketing - M-WIWI-106258	35
6.19. Digital Service Systems in Industry - M-WIWI-102808	36
6.20. Digitalization & Society - M-WIWI-106413	37
6.21. Econometrics and Statistics I - M-WIWI-101638	38
6.22. Econometrics and Statistics II - M-WIWI-101639	39
6.23. Economic Theory and its Application in Finance - M-WIWI-101502	40
6.24. Economics & Management - M-WIWI-106410	41
6.25. eEnergy: Markets, Services and Systems - M-WIWI-103720	42
6.26. Electives in Informatics - M-WIWI-101630	43
6.27. Electronic Markets - M-WIWI-101409	45
6.28. Emphasis in Informatics - M-WIWI-101628	47
6.29. Energy Economics and Energy Markets - M-WIWI-101451	49
6.30. Energy Economics and Technology - M-WIWI-101452	50
6.31. Entrepreneurship (EnTechnon) - M-WIWI-101488	51
6.32. Environmental Economics - M-WIWI-101468	53
6.33. Experimental Economics - M-WIWI-101505	54
6.34. Finance 1 - M-WIWI-101482	55
6.35. Foundations for Advanced Financial -Quant and -Machine Learning Research - M-WIWI-105894	56
6.36. Growth and Agglomeration - M-WIWI-101496	57
6.37. Incentives, Interactivity & Decisions in Organizations - M-WIWI-105923	58
6.38. Industrial Production II - M-WIWI-101471	59

6.39. Industrial Production III - M-WIWI-101412 .....	60
6.40. Informatics & Machine Learning - M-WIWI-105880 .....	61
6.41. Information Engineering - M-WIWI-101411 .....	62
6.42. Information Systems in Organizations - M-WIWI-104068 .....	63
6.43. Innovation and Growth - M-WIWI-101478 .....	64
6.44. Innovation Economics - M-WIWI-101514 .....	65
6.45. Innovation Management - M-WIWI-101507 .....	66
6.46. Intellectual Property Law - M-INFO-101215 .....	68
6.47. Management Accounting - M-WIWI-101498 .....	69
6.48. Market Engineering - M-WIWI-101446 .....	70
6.49. Marketing and Sales Management - M-WIWI-105312 .....	71
6.50. Mathematical Programming - M-WIWI-101473 .....	72
6.51. Microeconomic Theory - M-WIWI-101500 .....	74
6.52. Modeling the Dynamics of Financial Markets - M-WIWI-106660 .....	75
6.53. Module Master's Thesis - M-WIWI-106420 .....	78
6.54. Network Economics - M-WIWI-101406 .....	80
6.55. Operations Research in Supply Chain Management - M-WIWI-102832 .....	81
6.56. Private Business Law - M-INFO-101216 .....	83
6.57. Public Economic and Technology Law - M-INFO-106754 .....	84
6.58. Seminar Module - M-WIWI-106425 .....	85
6.59. Service Analytics - M-WIWI-101506 .....	87
6.60. Service Design Thinking - M-WIWI-101503 .....	88
6.61. Service Economics and Management - M-WIWI-102754 .....	90
6.62. Service Innovation, Design & Engineering - M-WIWI-102806 .....	91
6.63. Service Management - M-WIWI-101448 .....	93
6.64. Service Operations - M-WIWI-102805 .....	94
6.65. Sociology - M-GEISTSOZ-101169 .....	96
6.66. Statistics & Econometrics - M-WIWI-106411 .....	97
6.67. Stochastic Optimization - M-WIWI-103289 .....	98
6.68. Transport Infrastructure Policy and Regional Development - M-WIWI-101485 .....	100
<b>7. Courses .....</b>	<b>101</b>
7.1. Advanced Corporate Finance - T-WIWI-113469 .....	101
7.2. Advanced Digital Economics - T-WIWI-112990 .....	102
7.3. Advanced Game Theory - T-WIWI-102861 .....	103
7.4. Advanced Lab Blockchain Hackathon (Master) - T-WIWI-111126 .....	105
7.5. Advanced Lab Informatics (Master) - T-WIWI-110548 .....	106
7.6. Advanced Lab Realization of Innovative Services (Master) - T-WIWI-112914 .....	113
7.7. Advanced Lab Security - T-WIWI-109786 .....	114
7.8. Advanced Lab Security, Usability and Society - T-WIWI-108439 .....	115
7.9. Advanced Lab Sociotechnical Information Systems Development (Master) - T-WIWI-111125 .....	122
7.10. Advanced Machine Learning - T-WIWI-109921 .....	123
7.11. Advanced Machine Learning and Data Science - T-WIWI-111305 .....	125
7.12. Advanced Management Accounting - T-WIWI-102885 .....	126
7.13. Advanced Statistics - T-WIWI-103123 .....	128
7.14. Advanced Stochastic Optimization - T-WIWI-106548 .....	129
7.15. Advanced Topics in Digital Management - T-WIWI-111912 .....	130
7.16. Advanced Topics in Economic Theory - T-WIWI-102609 .....	132
7.17. Advanced Topics in Human Resource Management - T-WIWI-111913 .....	133
7.18. Agent-Based Modelling and Simulation - T-WIWI-113629 .....	135
7.19. AI Innovation Ecosystems - T-WIWI-113849 .....	138
7.20. Application of Social Science Methods (WiWi) - T-GEISTSOZ-109052 .....	139
7.21. Applied Econometrics - T-WIWI-111388 .....	140
7.22. Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services - T-WIWI-110339 .....	141
7.23. Applied material flow simulation - T-MACH-112213 .....	143
7.24. Artificial Intelligence in Service Systems - T-WIWI-108715 .....	145
7.25. Artificial Intelligence in Service Systems - Applications in Computer Vision - T-WIWI-111219 .....	147
7.26. Asset Pricing - T-WIWI-102647 .....	149
7.27. Auction Theory - T-WIWI-102613 .....	150
7.28. Basics of German Company Tax Law and Tax Planning - T-WIWI-108711 .....	151
7.29. Bayesian Statistics for Analyzing Data - T-WIWI-113471 .....	152
7.30. Behavioral Lab Exercise - T-WIWI-113095 .....	153

7.31. Behavioral Lab Exercise - T-WIWI-111806 .....	154
7.32. Bond Markets - T-WIWI-110995 .....	155
7.33. Business Data Analytics: Application and Tools - T-WIWI-109863 .....	156
7.34. Business Data Strategy - T-WIWI-106187 .....	157
7.35. Business Dynamics - T-WIWI-102762 .....	158
7.36. Business Intelligence Systems - T-WIWI-105777 .....	159
7.37. Business Planning - T-WIWI-102865 .....	161
7.38. Business Process Modelling - T-WIWI-102697 .....	164
7.39. Case Studies Seminar: Innovation Management - T-WIWI-102852 .....	166
7.40. Challenges in Supply Chain Management - T-WIWI-102872 .....	167
7.41. Collective Perception in Autonomous Driving - T-WIWI-113363 .....	168
7.42. Competition in Networks - T-WIWI-100005 .....	169
7.43. Computational Economics - T-WIWI-102680 .....	170
7.44. Computer Aided Data Analysis - T-GEISTSOZ-104565 .....	172
7.45. Computer Contract Law - T-INFO-102036 .....	173
7.46. Convex Analysis - T-WIWI-102856 .....	174
7.47. Conveying Technology and Logistics - T-MACH-102135 .....	175
7.48. Cooperative Autonomous Vehicles - T-WIWI-112690 .....	176
7.49. Copyright - T-INFO-101308 .....	177
7.50. Corporate Compliance - T-INFO-101288 .....	178
7.51. Corporate Risk Management - T-WIWI-109050 .....	179
7.52. Critical Information Infrastructures - T-WIWI-109248 .....	180
7.53. Current Directions in Consumer Psychology - T-WIWI-111100 .....	181
7.54. Database Systems and XML - T-WIWI-102661 .....	183
7.55. Demand-Driven Supply Chain Planning - T-WIWI-110971 .....	185
7.56. Derivatives - T-WIWI-102643 .....	186
7.57. Design Thinking - T-WIWI-102866 .....	187
7.58. Design Thinking in Practice - T-WIWI-113664 .....	189
7.59. Designing Interactive Systems: Human-AI Interaction - T-WIWI-113465 .....	190
7.60. Development of Sustainable, Digital Business Models - T-WIWI-113663 .....	192
7.61. Digital Democracy - T-WIWI-113160 .....	193
7.62. Digital Health - T-WIWI-109246 .....	194
7.63. Digital Marketing - T-WIWI-112693 .....	195
7.64. Digital Marketing and Sales in B2B - T-WIWI-106981 .....	196
7.65. Digital Services: Innovation & Business Models - T-WIWI-112757 .....	198
7.66. Discrete-Event Simulation in Production and Logistics - T-WIWI-102718 .....	200
7.67. Dynamic Macroeconomics - T-WIWI-109194 .....	202
7.68. Economics of Innovation - T-WIWI-112822 .....	203
7.69. Efficient Energy Systems and Electric Mobility - T-WIWI-102793 .....	205
7.70. eFinance: Information Systems for Securities Trading - T-WIWI-110797 .....	206
7.71. Emerging Trends in Digital Health - T-WIWI-110144 .....	207
7.72. Emerging Trends in Internet Technologies - T-WIWI-110143 .....	208
7.73. Emissions into the Environment - T-WIWI-102634 .....	209
7.74. Employment Law - T-INFO-111436 .....	210
7.75. Energy and Environment - T-WIWI-102650 .....	211
7.76. Energy Market Engineering - T-WIWI-107501 .....	212
7.77. Energy Networks and Regulation - T-WIWI-107503 .....	214
7.78. Energy Trading and Risk Management - T-WIWI-112151 .....	215
7.79. Engineering Interactive Systems: AI & Wearables - T-WIWI-113460 .....	216
7.80. Entrepreneurship - T-WIWI-102864 .....	217
7.81. Entrepreneurship Research - T-WIWI-102894 .....	220
7.82. Entrepreneurship Seasonal School - T-WIWI-113151 .....	222
7.83. Environmental and Resource Policy - T-WIWI-102616 .....	224
7.84. Environmental Economics and Sustainability - T-WIWI-102615 .....	225
7.85. Environmental Law - T-BGU-111102 .....	226
7.86. European and International Law - T-INFO-101312 .....	227
7.87. Experimental Design - T-WIWI-111395 .....	228
7.88. Experimental Economics - T-WIWI-102614 .....	229
7.89. Extraordinary Additional Course in the Module Cross-Functional Management Accounting - T-WIWI-108651 .....	230
7.90. Facility Location and Strategic Supply Chain Management - T-WIWI-102704 .....	231
7.91. Financial Econometrics - T-WIWI-103064 .....	232
7.92. Financial Econometrics II - T-WIWI-110939 .....	234

7.93. Financial Intermediation - T-WIWI-102623 .....	235
7.94. Fundamentals for Financial -Quant and -Machine Learning Research - T-WIWI-111846 .....	236
7.95. Fundamentals of National and International Group Taxation - T-WIWI-111304 .....	237
7.96. Global Manufacturing - T-WIWI-112103 .....	238
7.97. Global Optimization I - T-WIWI-102726 .....	239
7.98. Global Optimization I and II - T-WIWI-103638 .....	241
7.99. Global Optimization II - T-WIWI-102727 .....	244
7.100. Graph Theory and Advanced Location Models - T-WIWI-102723 .....	246
7.101. Growth and Development - T-WIWI-112816 .....	247
7.102. Heat Economy - T-WIWI-102695 .....	249
7.103. Human Factors in Autonomous Driving - T-WIWI-113059 .....	250
7.104. Human Factors in Security and Privacy - T-WIWI-109270 .....	251
7.105. Incentives in Organizations - T-WIWI-105781 .....	252
7.106. Information Service Engineering - T-WIWI-106423 .....	254
7.107. Innovation Management: Concepts, Strategies and Methods - T-WIWI-102893 .....	256
7.108. Innovation Theory and Policy - T-WIWI-102840 .....	257
7.109. Innovation2Business – Innovation Strategy in the Industrial Corporate Practice - T-MACH-112882 .....	259
7.110. Intelligent Agent Architectures - T-WIWI-111267 .....	260
7.111. Intelligent Agents and Decision Theory - T-WIWI-110915 .....	262
7.112. International Business Development and Sales - T-WIWI-110985 .....	264
7.113. Internet Law - T-INFO-101307 .....	265
7.114. Introduction to Bayesian Statistics for Analyzing Data - T-WIWI-110918 .....	266
7.115. Introduction to Sociology - T-GEISTSOZ-112798 .....	267
7.116. Introduction to Stochastic Optimization - T-WIWI-106546 .....	268
7.117. Joint Entrepreneurship Summer School - T-WIWI-109064 .....	269
7.118. Judgement and Decision Making - T-WIWI-111099 .....	271
7.119. KD <sup>3</sup> Lab Hands-On Research Course: New Ways and Tools in Experimental Economics - T-WIWI-111109 .....	273
7.120. Knowledge Discovery - T-WIWI-102666 .....	274
7.121. Large-scale Optimization - T-WIWI-106549 .....	276
7.122. Leadership and Innovation - T-WIWI-113716 .....	277
7.123. Liberalised Power Markets - T-WIWI-107043 .....	278
7.124. Life Cycle Assessment – Basics and Application Possibilities in an Industrial Context - T-WIWI-113107 .....	280
7.125. Machine Learning 1 - Basic Methods - T-WIWI-106340 .....	281
7.126. Machine Learning 2 – Advanced Methods - T-WIWI-106341 .....	283
7.127. Machine Learning and Optimization in Energy Systems - T-WIWI-113073 .....	285
7.128. Management Accounting 1 - T-WIWI-102800 .....	286
7.129. Management Accounting 2 - T-WIWI-102801 .....	288
7.130. Managing New Technologies - T-WIWI-102612 .....	290
7.131. Market Engineering: Information in Institutions - T-WIWI-102640 .....	291
7.132. Market Research - T-WIWI-107720 .....	292
7.133. Marketing Analytics - T-WIWI-103139 .....	294
7.134. Marketing Strategy Business Game - T-WIWI-102835 .....	296
7.135. Master's Thesis - T-WIWI-113003 .....	297
7.136. Matching Theory - T-WIWI-113264 .....	298
7.137. Mathematics for High Dimensional Statistics - T-WIWI-111247 .....	299
7.138. Media Management - T-WIWI-112711 .....	300
7.139. Methods in Economic Dynamics - T-WIWI-102906 .....	301
7.140. Methods in Innovation Management - T-WIWI-110263 .....	303
7.141. Mixed Integer Programming I - T-WIWI-102719 .....	304
7.142. Mixed Integer Programming II - T-WIWI-102720 .....	306
7.143. Modeling and OR-Software: Advanced Topics - T-WIWI-106200 .....	308
7.144. Modeling and Simulation - T-WIWI-112685 .....	309
7.145. Modeling the Dynamics of Financial Markets - T-WIWI-113414 .....	311
7.146. Multicriteria Optimization - T-WIWI-111587 .....	313
7.147. Multivariate Statistical Methods - T-WIWI-103124 .....	315
7.148. Nature-Inspired Optimization Methods - T-WIWI-102679 .....	316
7.149. Non- and Semiparametrics - T-WIWI-103126 .....	317
7.150. Nonlinear Optimization I - T-WIWI-102724 .....	318
7.151. Nonlinear Optimization I and II - T-WIWI-103637 .....	320
7.152. Nonlinear Optimization II - T-WIWI-102725 .....	322
7.153. Online Concepts for Karlsruhe City Retailers - T-WIWI-111848 .....	324
7.154. Operations Research in Health Care Management - T-WIWI-102884 .....	325

7.155. Operations Research in Supply Chain Management - T-WIWI-102715 .....	327
7.156. Optimization under Uncertainty - T-WIWI-106545 .....	328
7.157. Panel Data - T-WIWI-103127 .....	329
7.158. Parametric Optimization - T-WIWI-102855 .....	330
7.159. Patent Law - T-INFO-101310 .....	331
7.160. Planning and Management of Industrial Plants - T-WIWI-102631 .....	332
7.161. Platform & Market Engineering: Commerce, Media, and Digital Democracy - T-WIWI-112823 .....	333
7.162. Portfolio and Asset Liability Management - T-WIWI-103128 .....	334
7.163. Practical Philosophy 1.1 - T-GEISTSOZ-101170 .....	335
7.164. Practical Seminar Digital Service Systems - T-WIWI-106563 .....	336
7.165. Practical Seminar: Artificial Intelligence in Service Systems - T-WIWI-112152 .....	337
7.166. Practical Seminar: Data-Driven Information Systems - T-WIWI-106207 .....	338
7.167. Practical Seminar: Health Care Management (with Case Studies) - T-WIWI-102716 .....	339
7.168. Practical Seminar: Human-Centered Systems - T-WIWI-113459 .....	340
7.169. Practical Seminar: Service Innovation - T-WIWI-110887 .....	341
7.170. Predictive Mechanism and Market Design - T-WIWI-102862 .....	342
7.171. Predictive Modeling - T-WIWI-110868 .....	343
7.172. Price Management - T-WIWI-105946 .....	344
7.173. Pricing - T-WIWI-102883 .....	345
7.174. Probabilistic Time Series Forecasting Challenge - T-WIWI-111387 .....	347
7.175. Process Mining - T-WIWI-109799 .....	349
7.176. Production and Logistics Management - T-WIWI-102632 .....	351
7.177. Project Lab Cognitive Automobiles and Robots - T-WIWI-109985 .....	352
7.178. Project Lab Machine Learning - T-WIWI-109983 .....	354
7.179. Project Management - T-WIWI-103134 .....	355
7.180. Public International Law - T-INFO-113381 .....	356
7.181. Public Management - T-WIWI-102740 .....	358
7.182. Public Revenues - T-WIWI-102739 .....	359
7.183. Quantitative Methods in Energy Economics - T-WIWI-107446 .....	360
7.184. Recommender Systems - T-WIWI-102847 .....	361
7.185. Regulation Theory and Practice - T-WIWI-102712 .....	365
7.186. Responsible Artificial Intelligence - T-WIWI-111385 .....	366
7.187. Risk Management in Industrial Supply Networks - T-WIWI-102826 .....	367
7.188. Selected Legal Issues of Internet Law - T-INFO-108462 .....	368
7.189. Self-Booking-HOC-SPZ-ZAK-STK-Graded - T-WIWI-111439 .....	369
7.190. Self-Booking-HOC-SPZ-ZAK-STK-Graded - T-WIWI-111438 .....	370
7.191. Self-Booking-HOC-SPZ-ZAK-STK-Graded - T-WIWI-111440 .....	371
7.192. Self-Booking-HOC-SPZ-ZAK-STK-Ungraded - T-WIWI-111441 .....	372
7.193. Self-Booking-HOC-SPZ-ZAK-STK-Ungraded - T-WIWI-111442 .....	373
7.194. Self-Booking-HOC-SPZ-ZAK-STK-Ungraded - T-WIWI-111443 .....	374
7.195. Semantic Web Technologies - T-WIWI-110848 .....	375
7.196. Seminar Creating a Patent Specification - T-ETIT-100754 .....	378
7.197. Seminar Data-Mining in Production - T-MACH-108737 .....	379
7.198. Seminar in Business Administration A (Master) - T-WIWI-103474 .....	381
7.199. Seminar in Business Administration B (Master) - T-WIWI-103476 .....	392
7.200. Seminar in Digital Economics Master - T-WIWI-112991 .....	402
7.201. Seminar in Economic Policy - T-WIWI-102789 .....	404
7.202. Seminar in Economics A (Master) - T-WIWI-103478 .....	405
7.203. Seminar in Economics B (Master) - T-WIWI-103477 .....	410
7.204. Seminar in Engineering Science Master (approval) - T-WIWI-108763 .....	414
7.205. Seminar in Informatics A (Master) - T-WIWI-103479 .....	415
7.206. Seminar in Informatics B (Master) - T-WIWI-103480 .....	425
7.207. Seminar in Operations Research A (Master) - T-WIWI-103481 .....	434
7.208. Seminar in Operations Research B (Master) - T-WIWI-103482 .....	437
7.209. Seminar in Statistics A (Master) - T-WIWI-103483 .....	440
7.210. Seminar in Statistics B (Master) - T-WIWI-103484 .....	443
7.211. Seminar Production Technology - T-MACH-109062 .....	446
7.212. Seminar: Commercial and Corporate Law in the IT Industry - T-INFO-111405 .....	448
7.213. Seminar: IT- Security Law - T-INFO-111404 .....	449
7.214. Seminar: Legal Studies I - T-INFO-101997 .....	450
7.215. Seminar: Legal Studies II - T-INFO-105945 .....	455
7.216. Service Design Thinking - T-WIWI-102849 .....	461

7.217. Simulation Game in Energy Economics - T-WIWI-108016 .....	464
7.218. Smart Energy Infrastructure - T-WIWI-107464 .....	465
7.219. Smart Grid Applications - T-WIWI-107504 .....	466
7.220. Social Choice Theory - T-WIWI-102859 .....	467
7.221. Sociotechnical Information Systems Development - T-WIWI-109249 .....	468
7.222. Software Quality Management - T-WIWI-102895 .....	469
7.223. Spatial Economics - T-WIWI-103107 .....	471
7.224. Special Topics in Information Systems - T-WIWI-113727 .....	473
7.225. Special Topics in Information Systems - T-WIWI-113724 .....	474
7.226. Special Topics in Information Systems - T-WIWI-113726 .....	475
7.227. Special Topics in Information Systems - T-WIWI-113725 .....	476
7.228. Startup Experience - T-WIWI-111561 .....	477
7.229. Statistical Modeling of Generalized Regression Models - T-WIWI-103065 .....	480
7.230. Stochastic Calculus and Finance - T-WIWI-103129 .....	481
7.231. Strategy and Management Theory: Developments and “Classics” - T-WIWI-106190 .....	482
7.232. Successful Transformation Through Innovation - T-WIWI-111823 .....	485
7.233. Supplement Enterprise Information Systems - T-WIWI-110346 .....	486
7.234. Supplement Software- and Systemsengineering - T-WIWI-110372 .....	487
7.235. Supply Chain Management with Advanced Planning Systems - T-WIWI-102763 .....	488
7.236. Tax Law - T-INFO-111437 .....	490
7.237. Telecommunication and Internet Economics - T-WIWI-102713 .....	491
7.238. Telecommunications and Internet – Economics and Policy - T-WIWI-113147 .....	493
7.239. Telecommunications Law - T-INFO-101309 .....	495
7.240. The Future of Work - T-WIWI-112993 .....	496
7.241. Topics in Experimental Economics - T-WIWI-102863 .....	497
7.242. Topics in Stochastic Optimization - T-WIWI-112109 .....	498
7.243. Trademark and Unfair Competition Law - T-INFO-101313 .....	499
7.244. Transport Economics - T-WIWI-100007 .....	500
7.245. Trustworthy Emerging Technologies - T-WIWI-113026 .....	501
7.246. Tutoring: Training and Practice - T-WIWI-112967 .....	502
7.247. Valuation - T-WIWI-102621 .....	503
7.248. Workshop Business Wargaming – Analyzing Strategic Interactions - T-WIWI-106189 .....	504
7.249. Workshop Current Topics in Strategy and Management - T-WIWI-106188 .....	506



## 1 General information

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

### 1.1 Structural elements

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

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

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

### 1.2 Begin and completion of a module

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

### 1.3 Module versions

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

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

### 1.4 General and partial examinations

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

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

For further and more detailed information, see <https://campus.studium.kit.edu/faq.php>.

### 1.5 Types of examinations

Examinations are split into written examinations, oral examinations and alternative exam assessments ("Prüfungsleistungen anderer Art"). Examinations are always graded. Non exam assessments ("Studienleistungen") can be repeated several times and are not graded.



## 1.6 Repeating examinations

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

## 1.7 Examiners

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

## 1.8 Additional accomplishments

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

## 1.9 Further information

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

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

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

## 1.10 Contact

If you have any questions about modules or exams, please contact the examination office of the KIT Department of Economics and Management:

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## 2 Study plan

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

Digital Economics (M.Sc.)												
Term	Credits	Economics			Methods			Society	Electives			Master Thesis
1	31,5	Digital Economics 9 CP	Digital Financial Economics 9 CP	Economics & Management 9 CP	Informatics & Machine Learning 9 CP	Statistics & Econometrics 9 CP	Computation & Optimization 9 CP					
2	27											
3	31,5						Digitalization & Society 9 CP	Elective Module 1 9 CP	Elective Module 2 9 CP	Seminar Module 9 CP		
4	30										Master Thesis 30 CP	
	120	27			27			9	27			30

Figure 2: Structure of the Master's degree program SPO 2022 (Recommendation)

Figure 2 shows the structure of the subjects and the credits allocated to the subjects.

Figure 3 illustrates the examinations per semester in the Master's degree program Digital Economics based on an exemplary module selection.

Subject	Module	Course	Type	1st sem		2nd sem		3rd sem		4th sem		
				LC	CP	LC	CP	LC	CP	LC	CP	
Economics (27 CP)	Digital Economics (9 CP)	Advanced Digital Economics	L/E	wE	4,5							
		Innovation Theory and Policy	L/E			wE	4,5					
	Digital Financial Economics (9 CP)	Advanced Financial Machine Learning and Data Science	aL	EaT	9,0							
		Advanced Management Accounting	L	oE	4,5							
Economics & Management (9 CP)	Energy Market Engineering		L/E			wE	4,5					
Methods (27 CP)	Informatics & Machine Learning (9 CP)	Machine Learning 1 - Basic Methods	L/E	wE	4,5							
		Process Mining	L/E			wE	4,5					
	Statistics & Econometrics (9 CP)	Applied Econometrics	L/E	wE	4,5							
		Multivariate Statistical Methods	L/E			wE	4,5					
	Computation & Optimization (9 CP)	Dynamic Macroeconomics	L/E	oE	4,5							
		Global Optimization I	L			wE	4,5					
Society (9 CP)	Digitalization & Society (9 CP)	Designing Interactive Systems	L			EaT	4,5					
		Human Factors in Security and Privacy	L/E				wE	4,5				
		Nonlinear Optimization I and II	L/E				wE	9,0				
Electives (27 CP)	Mathematical Programming (9 CP)	Advanced Game Theory	L/E					wE	4,5			
		Auction Theory	L/E					wE	4,5			
	Microeconomic Theory (9 CP)	Seminar in Business Administration A (Master)	S					EaT	4,5			
		Seminar in Economics A (Master)	S					EaT	4,5			
Master Thesis (30 CP)										30,0		
Number of exams					6		6		6		0	18
CP:					31,5		27		31,5		30	120

L = Lecture  
 E = Exercise  
 aL = Advanced Lab  
 S = Seminar  
 wE = Written Examination  
 oE = Oral Examination  
 EaT = Examination of Another Type  
 CW = Coursework  
 LC = Learning Control  
 CP = Credit Points  
 sem = Semester

Figure 3: examinations per semester based on an exemplary module selection

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

### **3 Qualification objectives of the Master's program in Digital Economics**

Graduates of the master's program in Digital Economics have in-depth and extended knowledge of advancing digitalization and the associated transformation processes in the economy and society. They are able to identify and clarify the effects on competition policy, macroeconomics and sociopolitics. They are able to analyze these processes in a methodologically sound manner from different perspectives, as they have developed competencies in the following areas: Digital Economics, Financial Digital Economics, Economics and Management, Statistics, Econometrics and Optimization Theory, Applied Informatics with Machine Learning and Artificial Intelligence, and Digitalization and Society with ethical and sociological aspects of the digital transformation.

In the bilingually designed program, students work on and evaluate the international dimensions and contexts of these subject areas. They are able to work, present and discuss academically in both German and English. With the help of the program's extensive elective and specialization options, students develop their own areas of focus. At least one seminar paper and the master's thesis deepen the profile formation and expand the ability to independently write scientific papers.

Graduates of the master's program in Digital Economics are able to evaluate, select and combine suitable alternative courses of action on research-relevant topics. They can transfer and apply these to specific problems. In doing so, they assess complexity and risks, recognize potential for improvement and develop sustainable and responsible solutions and innovative improvement methods.

Graduates of the master's program in Digital Economics are able to exchange ideas with experts at a scientific level and assume prominent responsibility, also in an international team. They are particularly qualified for strategic fields of activity in all areas of public administration, in non-governmental organizations, in all areas of the private sector characterized by digitalization, in scientific research institutes as well as for a downstream scientific career (doctorate).

## 4 Key Skills

The master program Digital Economics (M.Sc.) at the KIT Department of Economics and Management distinguishes itself by an exceptionally high level of interdisciplinarity. With the combination of business science, economics, informatics, operations research as well as statistics and law, the integration of knowledge of different disciplines is an inherent element of the programme. As a result, interdisciplinary and connected thinking is encouraged in a natural way. Furthermore, the seminar courses in the master degree programme contribute significantly to the development of key skills by practicing to elaborate and write scientifically sound papers and presentations about special topics. The **integrative** taught key skills, which are acquired throughout the entire programme, can be classified into the following fields:

### Soft skills

Team work, social communication and creativity techniques  
Presentations and presentation techniques  
Logical and systematical arguing and writing  
Structured problem solving and communication

### Enabling skills

Decision making in business context  
Project management competences  
Fundamentals of business science  
English as a foreign language

### Orientalional knowledge

Acquisition of interdisciplinary knowledge  
Institutional knowledge about economic and legal systems  
Knowledge about international organisations  
Media, technology and innovation

The integrative acquisition of key skills especially takes place in several obligatory courses during the master programme, namely

- Seminar module
- Mentoring of the Master's thesis
- Business science, economics and informatics modules

Besides the integrated key skills, the additive acquisition of key skills, which are totalling at least three credits within the seminar module, is scheduled. Students may choose freely among the offered courses of HoC, ZAK and Sprachenzentrum.

## 5 Field of study structure

Mandatory		
Master's Thesis		30 CR
Economics		27 CR
Methods		27 CR
Society		9 CR
Electives		27 CR

### 5.1 Master's Thesis

**Credits**  
30

Mandatory		
M-WIWI-106420	Module Master's Thesis	30 CR

### 5.2 Economics

**Credits**  
27

Mandatory		
M-WIWI-106408	Digital Economics	9 CR
M-WIWI-106409	Digital Financial Economics	9 CR
M-WIWI-106410	Economics & Management	9 CR

### 5.3 Methods

**Credits**  
27

Mandatory		
M-WIWI-106412	Computation & Optimization	9 CR
M-WIWI-105880	Informatics & Machine Learning	9 CR
M-WIWI-106411	Statistics & Econometrics	9 CR

### 5.4 Society

**Credits**  
9

Mandatory		
M-WIWI-106413	Digitalization & Society	9 CR

**5.5 Electives**

**Credits**  
27



<b>Mandatory</b>		
M-WIWI-106425	Seminar Module	9 CR
<b>Economics (Election: at least 9 credits)</b>		
M-WIWI-101497	Agglomeration and Innovation	9 CR
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-101638	Econometrics and Statistics I	9 CR
M-WIWI-101502	Economic Theory and its Application in Finance	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
<b>Business Administration (Election: at most 9 credits)</b>		
M-WIWI-105659	Advanced Machine Learning and Data Science	9 CR
M-WIWI-103119	Advanced Topics in Strategy and Management	9 CR
M-WIWI-101410	Business & Service Engineering	9 CR
M-WIWI-105714	Consumer Research	9 CR
M-WIWI-101498	Management Accounting	9 CR
M-WIWI-101510	Cross-Functional Management Accounting	9 CR
M-WIWI-103117	Data Science: Data-Driven Information Systems	9 CR
M-WIWI-101647	Data Science: Evidence-based Marketing	9 CR
M-WIWI-105661	Data Science: Intelligent, Adaptive, and Learning Information Services	9 CR
M-WIWI-104080	Designing Interactive Information Systems	9 CR
M-WIWI-106258	Digital Marketing	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-105894	Foundations for Advanced Financial -Quant and -Machine Learning Research	9 CR
M-WIWI-105923	Incentives, Interactivity & Decisions in Organizations	9 CR
M-WIWI-101471	Industrial Production II	9 CR
M-WIWI-101412	Industrial Production III	9 CR
M-WIWI-101411	Information Engineering	9 CR
M-WIWI-104068	Information Systems in Organizations	9 CR
M-WIWI-101507	Innovation Management	9 CR
M-WIWI-105312	Marketing and Sales Management	9 CR
M-WIWI-101446	Market Engineering	9 CR
M-WIWI-106660	Modeling the Dynamics of Financial Markets	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
<b>Informatics (Election: at most 9 credits)</b>		

M-WIWI-101628	Emphasis in Informatics	9 CR
M-WIWI-101630	Electives in Informatics	9 CR
<b>Operations Research (Election: at most 9 credits)</b>		
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
<b>Statistics (Election: at most 9 credits)</b>		
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
<b>Law and Sociology (Election: at most 9 credits)</b>		
M-INFO-106754	Public Economic and Technology Law <sup>neu</sup>	9 CR
M-INFO-101215	Intellectual Property Law	9 CR
M-INFO-101216	Private Business Law	9 CR
M-GEISTSOZ-101169	Sociology	9 CR

## 6 Modules

### M

## 6.1 Module: Advanced Machine Learning and Data Science [M-WIWI-105659]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	English	4	2

Mandatory			
T-WIWI-111305	<a href="#">Advanced Machine Learning and Data Science</a>	9 CR	Ulrich

### Competence Certificate

The assessment is carried out in an alternative form. The final grade is evaluated based on the intermediate presentations during the project, the quality of the implementation, the final written thesis and a final presentation.

### Prerequisites

The module M-WIWI-106660 "Modeling the Dynamics of Financial Markets" must be passed.

### Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-106660 - Modeling the Dynamics of Financial Markets](#) must have been started.

### Competence Goal

After a successful project, the students can:

- select and apply modern machine learning methods to solve a data science problem;
- organize themselves in a team in a goal-oriented manner and bring an extensive software project in the field of data science and machine learning to success;
- deepen their data science and machine learning skills
- solve a finance problem with the help of data science and machine learning algorithm.

### Content

The course is targeted at students with a major in Data Science and/or Machine Learning and/or Quantitative Finance. It offers students the opportunity to develop hands-on knowledge on new developments in the intersection of quantitative financial markets, data science and machine learning. The result of the project should not only be a final thesis, but the implementation of methods or development of an algorithm in machine learning and data science. Typically, problems and data are taken from current research and innovations in the field of quantitative asset and risk management.

### Workload

Total effort for 9 credit points: approx. 270 hours are divided into the following parts: Communication: Exchange during the project: 30 h, Final presentation: 10 h; Implementation and thesis: Preparation before development (Problem analysis and solution design): 70 h, Solution implementation: 110 h, Tests and quality assurance: 50 h.

### Recommendation

None

## M

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

**Responsible:** Prof. Dr. Berthold Wigger  
**Organisation:** KIT Department of Economics and Management  
**Part of:** Electives (Economics)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	7

Electives (Election: between 1 and 2 items)			
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	4,5 CR	Gutekunst, Wigger
T-WIWI-102740	Public Management	4,5 CR	Wigger
Supplementary Courses (Election: between 0 and 1 items)			
T-WIWI-111304	Fundamentals of National and International Group Taxation	4,5 CR	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.

**Prerequisites**

At least one of the courses "Public Management" or "Basics of German Company Tax Law and Tax Planning" is mandatory in the module and must be successfully examined.

**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.

**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.

**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**

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

Attendance time: approx. 90 hours

Preparation and follow-up: approx. 135 hours

Exam and exam preparation: approx. 45 hours

The exact distribution is based on the credit points of the courses in the module.

**Recommendation**

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

## M

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

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	1

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

**Competence Certificate**

The control of success takes place in the form of partial examinations (according to §4(2), 1-3 SPO) on the courses of the module, amounting to a total of 9 LP. The performance review is described for each course of this module. The overall grade of the module is formed from the LP-weighted grades of the partial examinations and truncated after the first decimal place.

**Prerequisites**

None

**Competence Goal**

Upon completion of the module, students will be able to,

- independently analyze strategic issues in a structured manner using appropriate models and frames of reference from management theory and derive recommendations.
- Convincingly present their position by means of a well thought-out argumentation in structured discussions.
- independently deal with a current, research-oriented issue from strategic management.
- draw his/her own conclusions from the little structured information by incorporating his/her interdisciplinary knowledge and selectively develop the current research results.
- apply and discuss theoretical contents of management theory to real situations by intensively dealing with a variety of practice-relevant case studies.

**Content**

In terms of content, three focal points will be set. First, strategic issues are discussed and analyzed on the basis of jointly selected case studies. Secondly, the students deal intensively with the topic of business wargaming in a workshop and analyze strategic interactions. Thirdly, topics of strategy and management theory will be elaborated in a written paper.

**Annotation**

The module is admission restricted. Upon successful admission to a course, the student is guaranteed the opportunity to complete the module. Examinations are offered at least every other semester so that the entire module can be completed in two semesters.

**Workload**

Total effort for 9 credit points: approx. 270 hours. The exact distribution is done according to the credit points of the courses of the module. The workload for courses with 3 credits is approx. 90h.

## M

**6.4 Module: Agglomeration and Innovation [M-WIWI-101497]**

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

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each term	<b>Duration</b> 1 term	<b>Language</b> English	<b>Level</b> 4	<b>Version</b> 3
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<b>Compulsory Elective Courses (Election: 9 credits)</b>			
T-WIWI-102609	<a href="#">Advanced Topics in Economic Theory</a>	4,5 CR	Mitsch
T-WIWI-109194	<a href="#">Dynamic Macroeconomics</a>	4,5 CR	Brumm
T-WIWI-112822	<a href="#">Economics of Innovation</a>	4,5 CR	Ott
T-WIWI-103107	<a href="#">Spatial Economics</a>	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 add up to at least 9.

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

**Prerequisites**

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

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-102708 - Economics I: Microeconomics](#) must have been started.
2. The course [T-WIWI-102709 - Economics II: Macroeconomics](#) must have been started.

**Competence Goal**

The student

- applies quantitative methods in the context of economic models
- learns advanced micro- and macroeconomic theories
- is able to derive policy recommendations based on theory
- can identify the importance of alternative incentive mechanisms for the development and spread of innovations
- begins to understand the connections between market form and the development of innovations
- analyzes the determinants of the spatial distribution of economic activity
- understands how processes of concentration result from the interplay of agglomeration and dispersion forces

**Content**

The module comprises theories of incentives for the development of innovations as well as theories of wage-based labor mobility, which leads to spatial concentration processes. The microfounded optimality decisions of the actors are in each case transformed into macroeconomic results. In the context of the theory of innovations the diffusion of technological knowledge and the resulting effect on growth due to technological progress is discussed and economic-policy implications are derived. Spatial economics adds to the picture of economic activity by introducing a spatial point of view.

**Workload**

Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.



## M

**6.5 Module: Analytics and Statistics [M-WIWI-101637]**

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

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

Compulsory Elective Courses (Election: )			
T-WIWI-106341	<a href="#">Machine Learning 2 – Advanced Methods</a>	4,5 CR	Zöllner
T-WIWI-111247	<a href="#">Mathematics for High Dimensional Statistics</a>	4,5 CR	Grothe
T-WIWI-103124	<a href="#">Multivariate Statistical Methods</a>	4,5 CR	Grothe
T-WIWI-103123	<a href="#">Advanced Statistics</a>	4,5 CR	Grothe
T-WIWI-112109	<a href="#">Topics in Stochastic Optimization</a>	4,5 CR	Rebennack

**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.

**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

## 6.6 Module: Applied Strategic Decisions [M-WIWI-101453]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	English	4	6

Mandatory			
T-WIWI-102861	<a href="#">Advanced Game Theory</a>	4,5 CR	Ehrhart, Puppe, Reiß
Supplementary Courses (Election: between 4,5 and 5 credits)			
T-WIWI-113469	<a href="#">Advanced Corporate Finance</a>	4,5 CR	Ruckes
T-WIWI-102613	<a href="#">Auction Theory</a>	4,5 CR	Ehrhart
T-WIWI-102614	<a href="#">Experimental Economics</a>	4,5 CR	Weinhardt
T-WIWI-102623	<a href="#">Financial Intermediation</a>	4,5 CR	Ruckes
T-WIWI-112823	<a href="#">Platform &amp; Market Engineering: Commerce, Media, and Digital Democracy</a>	4,5 CR	Weinhardt
T-WIWI-102862	<a href="#">Predictive Mechanism and Market Design</a>	4,5 CR	Reiß
T-WIWI-105781	<a href="#">Incentives in Organizations</a>	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.

### 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. However, this choice can only be made by the examination office of the Department of Economics and Management.

### 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.

### 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.

### 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.

### Recommendation

Basic knowledge in game theory is assumed.

## M

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

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	9

Compulsory Elective Courses (Election: 9 credits)			
T-WIWI-113160	Digital Democracy	4,5 CR	Fegert
T-WIWI-112757	Digital Services: Innovation & Business Models	4,5 CR	Satzger
T-WIWI-110887	Practical Seminar: Service Innovation	4,5 CR	Satzger
T-WIWI-102847	Recommender Systems	4,5 CR	Geyer-Schulz
T-WIWI-113724	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.

**Prerequisites**

None

**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

**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.

**Annotation**

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

From summer semester 2023, the course Service Innovation will be offered with a revised course concept and content. The focus will be on the closer integration of the topics of service innovation and digitalization. Current foundational content (e.g., on service innovation challenges or human-centered innovation methods) will remain. New content will cover topics such as digital platforms and ecosystems, IoT and smart service innovation, and business models.

**Workload**

The total workload for this module is approx. 270 hours (9 credits). The distribution is based on the credit points of the courses in the module. The workload for courses with 4.5 credits is approx. 135 hours, for courses with 5 credits approx. 150 hours.

The total number of hours per course is calculated from the time required to attend the lectures and exercises, as well as the examination times and the time required for an average student to achieve the learning objectives of the module for an average performance.

**Recommendation**

None

## M

**6.8 Module: Collective Decision Making [M-WIWI-101504]**

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

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

Compulsory Elective Courses (Election: )			
T-WIWI-102740	<a href="#">Public Management</a>	4,5 CR	Wigger
T-WIWI-102859	<a href="#">Social Choice Theory</a>	4,5 CR	Puppe

**Competence Certificate**

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

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

**Prerequisites**

None

**Competence Goal**

Students

- are able to model and assess problems in public economics and to analyze them with respect to positive and normative aspects,
- 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.

**Content**

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

**Workload**

Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.

## M

## 6.9 Module: Computation &amp; Optimization [M-WIWI-106412]

**Responsible:** Prof. Dr. Oliver Stein  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Methods](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	1

Compulsory Elective Courses (Election: )			
T-WIWI-109194	<a href="#">Dynamic Macroeconomics</a>	4,5 CR	Brumm
T-WIWI-102704	<a href="#">Facility Location and Strategic Supply Chain Management</a>	4,5 CR	Nickel
T-WIWI-102726	<a href="#">Global Optimization I</a>	4,5 CR	Stein
T-WIWI-106549	<a href="#">Large-scale Optimization</a>	4,5 CR	Rebennack
T-WIWI-102719	<a href="#">Mixed Integer Programming I</a>	4,5 CR	Stein
T-WIWI-102679	<a href="#">Nature-Inspired Optimization Methods</a>	4,5 CR	Shukla
T-WIWI-106545	<a href="#">Optimization under Uncertainty</a>	4,5 CR	Rebennack

**Competence Certificate**

The assessment is carried out as partial exams 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 and describes the basic concepts of advanced optimization methods, especially from dynamic optimization in macroeconomics, mixed-integer, global, high-dimensional, nature-inspired and stochastic optimization as well as from location planning and supply chain management
- Knows the methods and models essential for quantitative analysis,
- models and classifies optimization problems and selects appropriate optimization procedures to solve even challenging optimization problems independently and, if necessary, with computer assistance,
- validates, illustrates and interprets obtained solutions,
- recognizes disadvantages of solution methods and, if necessary, is able to make suggestions for their adaptation to practical problems.

**Content**

The module focuses on teaching both theoretical foundations and solution methods for optimization problems relevant in the field of Digital Economics.

**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

**6.10 Module: Consumer Research [M-WIWI-105714]**

**Responsible:** Prof. Dr. Benjamin Scheibehenne  
**Organisation:** KIT Department of Economics and Management  
**Part of:** Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	English	4	5

Compulsory Elective Courses (Election: )			
T-WIWI-113471	<a href="#">Bayesian Statistics for Analyzing Data</a>	4,5 CR	Scheibehenne
T-WIWI-113095	<a href="#">Behavioral Lab Exercise</a>	4,5 CR	Nieken, Scheibehenne
T-WIWI-111100	<a href="#">Current Directions in Consumer Psychology</a>	4,5 CR	Scheibehenne
T-WIWI-111395	<a href="#">Experimental Design</a>	4,5 CR	Scheibehenne
T-WIWI-111099	<a href="#">Judgement and Decision Making</a>	4,5 CR	Scheibehenne
T-WIWI-111109	<a href="#">KD<sup>2</sup>Lab Hands-On Research Course: New Ways and Tools in Experimental Economics</a>	4,5 CR	Weinhardt
T-WIWI-107720	<a href="#">Market Research</a>	4,5 CR	Klarmann

**Competence Certificate**

The assessment is based on partial exams within the classes offered in this module. Please check the descriptions of the classes for details.

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

**Prerequisites**

Willingness to actively engage with the topic.

**Competence Goal**

- Understand human judgment and decision making in an economic context
- Learn how to plan, program, conduct, statistically analyze, visualize, model, and report behavioral experiments
- Critically evaluate scientific findings in the aftermath of the replication crisis

**Content**

This module provides students with in-depth knowledge about consumer research at the intersection between Marketing, Psychology, and Cognitive Science. The module consists of classes that look into how individuals and groups make judgments and decisions and what factors influences their behavior (e.g. the lecture on judgment and decision making). Because most findings in this area of research rely on behavioral experiments, this module also focuses on methodological skills. This includes classes on how to plan and design behavioral experiments, conduct and report meaningful statistical analyses, and develop computational cognitive models. The module also includes classes about reproducibility and transparency in the behavioral sciences. The module is a pre-requisite for writing a Master thesis at the KIT Cognition and Consumer Behavior lab.

**Workload**

The total workload for this module is approximately 270 hours.

**Recommendation**

Interest in behavioral research.



## M

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

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	English	4	13

Mandatory			
T-WIWI-102885	<a href="#">Advanced Management Accounting</a>	4,5 CR	Wouters
Supplementary Courses (Election: 4,5 credits)			
T-WIWI-105777	<a href="#">Business Intelligence Systems</a>	4,5 CR	Mädche
T-WIWI-105781	<a href="#">Incentives in Organizations</a>	4,5 CR	Nieken
T-WIWI-102835	<a href="#">Marketing Strategy Business Game</a>	1,5 CR	Klarmann
T-WIWI-107720	<a href="#">Market Research</a>	4,5 CR	Klarmann
T-WIWI-111848	<a href="#">Online Concepts for Karlsruhe City Retailers</a>	3 CR	Klarmann
T-WIWI-102621	<a href="#">Valuation</a>	4,5 CR	Ruckes
T-WIWI-108651	<a href="#">Extraordinary Additional Course in the Module Cross-Functional Management Accounting</a>	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.

**Prerequisites**

The course "Advanced Management Accounting" is compulsory.

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

**Competence Goal**

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

**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.

**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**

Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.

**Recommendation**

None

## M

**6.12 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:** Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	English	4	9

Compulsory Elective Courses (Election: )			
T-WIWI-108715	<a href="#">Artificial Intelligence in Service Systems</a>	4,5 CR	Satzger
T-WIWI-111219	<a href="#">Artificial Intelligence in Service Systems - Applications in Computer Vision</a>	4,5 CR	Satzger
T-WIWI-109863	<a href="#">Business Data Analytics: Application and Tools</a>	4,5 CR	Weinhardt
T-WIWI-106187	<a href="#">Business Data Strategy</a>	4,5 CR	Weinhardt
T-WIWI-105777	<a href="#">Business Intelligence Systems</a>	4,5 CR	Mädche
T-WIWI-113160	<a href="#">Digital Democracy</a>	4,5 CR	Fegert
T-WIWI-110918	<a href="#">Introduction to Bayesian Statistics for Analyzing Data</a>	4,5 CR	Scheibehenne
T-WIWI-113459	<a href="#">Practical Seminar: Human-Centered Systems</a>	4,5 CR	Mädche
T-WIWI-111385	<a href="#">Responsible Artificial Intelligence</a>	4,5 CR	Weinhardt
T-WIWI-106207	<a href="#">Practical Seminar: Data-Driven Information Systems</a>	4,5 CR	Satzger, 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.

**Prerequisites**

None.

**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.

**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.

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**Workload**

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

**Recommendation**

The module requires a basic understanding of the tasks, systems and processes in business informatics. It is therefore recommended that students attend the course Fundamentals of Information Systems [2540450] beforehand. Furthermore, basic knowledge of operations research as well as descriptive and inferential statistics is required.

## M

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

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	English	4	5

Compulsory Elective Courses (Election: 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.

**Prerequisites**

Keine.

**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

**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".

**Workload**

The total workload for this module is approximately 270 hours.

**Recommendation**

None

## M

## 6.14 Module: Data Science: Intelligent, Adaptive, and Learning Information Services [M-WIWI-105661]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	2

Compulsory Elective Courses (Election: 9 credits)			
T-WIWI-109921	<a href="#">Advanced Machine Learning</a>	4,5 CR	Geyer-Schulz, Nazemi
T-WIWI-111219	<a href="#">Artificial Intelligence in Service Systems - Applications in Computer Vision</a>	4,5 CR	Satzger
T-WIWI-102762	<a href="#">Business Dynamics</a>	4,5 CR	Geyer-Schulz, Glenn
T-WIWI-111267	<a href="#">Intelligent Agent Architectures</a>	4,5 CR	Geyer-Schulz
T-WIWI-110915	<a href="#">Intelligent Agents and Decision Theory</a>	4,5 CR	Geyer-Schulz
T-WIWI-102847	<a href="#">Recommender Systems</a>	4,5 CR	Geyer-Schulz

### 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.

### Prerequisites

None

### Competence Goal

The student

- models, analyzes and optimizes the structure and dynamics of complex economic changes.
- designs and develops intelligent, adaptive or learning agents as essential elements of information services.
- knows the essential learning methods for this and can apply them (also on modern architectures) in a targeted manner.
- develops and implements personalized services, especially in the area of recommender systems.
- develops solutions in teams.

### Content

The Intelligent Architectures course addresses how to design modern agent-based systems. The focus here is on software architecture and design patterns relevant to learning systems. In addition, important machine learning methods that complete the intelligent system are discussed. Examples of systems presented include key-map architectures and genetic methods.

The impact of management decisions in complex systems is considered in Business Dynamics. Understanding, modeling, and simulating complex systems enables analysis, purposeful design, and optimization of markets, business processes, regulations, and entire enterprises.

Special problems of intelligent systems are covered in Personalization and Services and Recommendersystems. The content includes approaches and methods to design user-oriented services. The measurement and monitoring of service systems is discussed, the design of personalized offers is discussed and the generation of recommendations based on collected data from products and customers is shown. The importance of user modeling and recognition is addressed, as well as data security and privacy.

### Annotation

The module replaces from summer semester 2021 M-WIWI-101470 "Data Science: Advanced CRM".

### Workload

The total workload for this module is approx. 270 hours (9 credits). The distribution is based on the credit points of the courses in the module. The workload for courses with 4.5 credits is approx. 135 hours.

The total number of hours per course is calculated from the time required to attend the lectures and exercises, as well as the examination times and the time required for an average student to achieve the learning objectives of the module for an average performance.

### Recommendation

None

## M

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

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	English	4	5

Compulsory Elective Courses (Election: at least 1 item)			
T-WIWI-113465	<a href="#">Designing Interactive Systems: Human-AI Interaction</a>	4,5 CR	Mädche
T-WIWI-113460	<a href="#">Engineering Interactive Systems: AI &amp; Wearables</a>	4,5 CR	Mädche
Supplementary Courses (Election: at most 1 item)			
T-WIWI-111109	<a href="#">KD<sup>2</sup>Lab Hands-On Research Course: New Ways and Tools in Experimental Economics</a>	4,5 CR	Weinhardt
T-WIWI-113459	<a href="#">Practical Seminar: Human-Centered Systems</a>	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.

**Prerequisites**

In this module, the courses "Designing Interactive Systems" or "Engineering Interactive Systems" must be compulsorily taken.

**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

**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

**6.16 Module: Digital Economics [M-WIWI-106408]**

**Responsible:** Prof. Dr. Clemens Puppe  
Dr. Frank Rosar

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

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	1

Mandatory			
T-WIWI-112990	<a href="#">Advanced Digital Economics</a>	4,5 CR	Rosar
Compulsory Elective Courses (Election: 1 item)			
T-WIWI-102861	<a href="#">Advanced Game Theory</a>	4,5 CR	Ehrhart, Puppe, Reiß
T-WIWI-102613	<a href="#">Auction Theory</a>	4,5 CR	Ehrhart
T-WIWI-102840	<a href="#">Innovation Theory and Policy</a>	4,5 CR	Ott
T-WIWI-102862	<a href="#">Predictive Mechanism and Market Design</a>	4,5 CR	Reiß
T-WIWI-112991	<a href="#">Seminar in Digital Economics Master</a>	4,5 CR	Szech
T-WIWI-102859	<a href="#">Social Choice Theory</a>	4,5 CR	Puppe
T-WIWI-102713	<a href="#">Telecommunication and Internet Economics</a>	4,5 CR	Mitsch

**Competence Certificate**

The module examination takes the form of partial examinations on the core course and other courses of the module totaling at least 9 ECTS. The course assessment is described for each course of this module. The overall grade of the module is formed from the ECTS weighted grades of the partial examinations and truncated after the first decimal place.

**Competence Goal**

The student

- has comprehensive knowledge of the substantive problems and economic issues raised by digitization, e.g. in the areas of game theory, mechanism design, in the analysis of networks, innovation, as well as internet economics,
- acquires comprehensive knowledge of advanced methods of economic modeling,
- validates, illustrates, and interprets models developed in economic research.

**Content**

The module offers a comprehensive portfolio of economic models and methods for analyzing a wide range of economic issues, especially in the context of digitalization.

**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

## 6.17 Module: Digital Financial Economics [M-WIWI-106409]

**Responsible:** Prof. Dr. Martin Ruckes  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Economics](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	English	4	2

Compulsory Elective Courses (Election: )			
T-WIWI-111305	<a href="#">Advanced Machine Learning and Data Science</a>	9 CR	Ulrich
T-WIWI-102647	<a href="#">Asset Pricing</a>	4,5 CR	Ruckes, Uhrig-Homburg
T-WIWI-110995	<a href="#">Bond Markets</a>	4,5 CR	Uhrig-Homburg
T-WIWI-102643	<a href="#">Derivatives</a>	4,5 CR	Uhrig-Homburg
T-WIWI-102621	<a href="#">Valuation</a>	4,5 CR	Ruckes

**Competence Certificate**

The assessment is carried out as partial exams 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 able to explain, analyze and derive answers to advanced economic and methodological issues in finance,
- has the ability to understand novel methods and to identify and evaluate their advantages and disadvantages

**Content**

In the module courses, students are taught and discuss advanced economic and methodological knowledge of modern finance on a broad basis. One focus is on current digital methods.

**Workload**

The total workload for this module is approximately 270 hours.

## M

**6.18 Module: Digital Marketing [M-WIWI-106258]**

**Responsible:** Prof. Dr. Ann-Kristin Kupfer  
**Organisation:** KIT Department of Economics and Management  
**Part of:** Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	English	4	1

Mandatory			
T-WIWI-112693	Digital Marketing	4,5 CR	Kupfer
Supplementary Courses (Election: 4,5 credits)			
T-WIWI-106981	Digital Marketing and Sales in B2B	1,5 CR	Klarmann, Konhäuser
T-WIWI-111099	Judgement and Decision Making	4,5 CR	Scheibehenne
T-WIWI-107720	Market Research	4,5 CR	Klarmann
T-WIWI-112711	Media Management	4,5 CR	Kupfer
T-WIWI-111848	Online Concepts for Karlsruhe City Retailers	3 CR	Klarmann

**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.

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

**Prerequisites**

None

**Competence Goal**

Students

- have an advanced knowledge about central marketing contents
- have a fundamental understanding of the marketing instruments
- know current fundamental principles and latest trends in the field of digital marketing
- know and understand several strategic concepts and how to implement them
- are able to implement their extensive marketing knowledge in a practical context
- are able to critically discuss and question theoretical concepts and current practices in marketing
- have theoretical knowledge that is fundamental for writing a master thesis in the field of marketing
- have gained insight into scientific research that prepares them to independently write a master's thesis
- have the theoretical knowledge and skills necessary to work in or collaborate with the marketing department of a company

**Content**

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

**Workload**

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

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

## M

## 6.19 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:** Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	8

Compulsory Elective Courses (Election: 9 credits)			
T-WIWI-102872	Challenges in Supply Chain Management	4,5 CR	Mohr
T-WIWI-112757	Digital Services: Innovation & Business Models	4,5 CR	Satzger
T-WIWI-107043	Liberalised Power Markets	5,5 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

**Prerequisites**

This module can only be assigned as an elective module.

**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.

**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.

**Annotation**

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

From summer semester 2023, the course Service Innovation will be offered with a revised course concept and content. The focus will be on the closer integration of the topics of service innovation and digitalization. Current foundational content (e.g., on service innovation challenges or human-centered innovation methods) will remain. New content will cover topics such as digital platforms and ecosystems, IoT and smart service innovation, and business models.

**Workload**

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

**Recommendation**

None

## M

**6.20 Module: Digitalization & Society [M-WIWI-106413]**

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** Society

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	2

Compulsory Elective Courses (Election: )			
T-WIWI-113465	<a href="#">Designing Interactive Systems: Human-AI Interaction</a>	4,5 CR	Mädche
T-GEISTSOZ-112798	<a href="#">Introduction to Sociology</a>	4,5 CR	Mäs
T-WIWI-109270	<a href="#">Human Factors in Security and Privacy</a>	4,5 CR	Volkamer
T-WIWI-102640	<a href="#">Market Engineering: Information in Institutions</a>	4,5 CR	Weinhardt
T-GEISTSOZ-101170	<a href="#">Practical Philosophy 1.1</a>	4,5 CR	Schefczyk
T-WIWI-112993	<a href="#">The Future of Work</a>	4,5 CR	Nieken

**Competence Certificate**

The assessment is carried out as partial exams 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.

**Prerequisites**

Please check the individual courses for any prerequisites and recommendations

**Competence Goal**

The student

- knows and describes the basic concepts of advanced optimization methods, especially from dynamic optimization in macroeconomics, mixed-integer, global, high-dimensional, nature-inspired and stochastic optimization as well as from location planning and supply chain management
- Knows the methods and models essential for quantitative analysis,
- models and classifies optimization problems and selects appropriate solution procedures to solve even challenging optimization problems independently and, if necessary, with computer assistance,
- validates, illustrates and interprets obtained solutions,
- recognizes disadvantages of solution methods and, if necessary, is able to make suggestions for their adaptation to practical problems.

**Content**

The module focuses on teaching both theoretical foundations and solution methods for optimization problems relevant in the field of Digital Economics.

**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

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

**Responsible:** Prof. Dr. Melanie Schienle  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Electives \(Economics\)](#)  
[Electives \(Statistics\)](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	5

Mandatory			
T-WIWI-111388	<a href="#">Applied Econometrics</a>	4,5 CR	Schienle
Supplementary Courses (Election: between 4,5 and 5 credits)			
T-WIWI-103064	<a href="#">Financial Econometrics</a>	4,5 CR	Schienle
T-WIWI-103126	<a href="#">Non- and Semiparametrics</a>	4,5 CR	Schienle
T-WIWI-103127	<a href="#">Panel Data</a>	4,5 CR	Heller
T-WIWI-110868	<a href="#">Predictive Modeling</a>	4,5 CR	Krüger
T-WIWI-111387	<a href="#">Probabilistic Time Series Forecasting Challenge</a>	4,5 CR	Krüger
T-WIWI-103065	<a href="#">Statistical Modeling of Generalized Regression Models</a>	4,5 CR	Heller
T-WIWI-110939	<a href="#">Financial Econometrics II</a>	4,5 CR	Schienle

**Competence Certificate**

The assessment is carried out as partial exams (according to Section 4(2), 1-3 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.

**Prerequisites**

The course "Applied Econometrics" [2520020] is compulsory and must be examined.

**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.

**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

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

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German	4	5

**Election notes**

+++++

**This module will not count towards the degree until the module "Econometrics and Statistics I" has also been successfully completed.** If the module "Econometrics and Statistics I" is booked out to the additional examinations, the "Econometrics and Statistics II" module loses its curricular validity/valuation for the degree.

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Compulsory Elective Courses (Election: at least 1 item)			
T-WIWI-103064	<a href="#">Financial Econometrics</a>	4,5 CR	Schienle
T-WIWI-110939	<a href="#">Financial Econometrics II</a>	4,5 CR	Schienle
T-WIWI-103126	<a href="#">Non- and Semiparametrics</a>	4,5 CR	Schienle
T-WIWI-103127	<a href="#">Panel Data</a>	4,5 CR	Heller
T-WIWI-110868	<a href="#">Predictive Modeling</a>	4,5 CR	Krüger
T-WIWI-111387	<a href="#">Probabilistic Time Series Forecasting Challenge</a>	4,5 CR	Krüger
T-WIWI-103065	<a href="#">Statistical Modeling of Generalized Regression Models</a>	4,5 CR	Heller
Additional Lectures (Election: at most 1 item)			
T-WIWI-103124	<a href="#">Multivariate Statistical Methods</a>	4,5 CR	Grothe
T-WIWI-103128	<a href="#">Portfolio and Asset Liability Management</a>	4,5 CR	Safarian
T-WIWI-103123	<a href="#">Advanced Statistics</a>	4,5 CR	Grothe
T-WIWI-103129	<a href="#">Stochastic Calculus and Finance</a>	4,5 CR	Safarian

**Competence Certificate**

The assessment is carried out as partial exams (according to Section 4(2), 1-3 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.

**Prerequisites**

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

At least one course must be chosen from the compulsory elective programme.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The module [M-WIWI-101638 - Econometrics and Statistics I](#) must have been started.

**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.

**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

**6.23 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:** Electives (Economics)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	English	4	6

Compulsory Elective Courses (Election: 1 item)			
T-WIWI-102609	<a href="#">Advanced Topics in Economic Theory</a>	4,5 CR	Mitusch
T-WIWI-102861	<a href="#">Advanced Game Theory</a>	4,5 CR	Ehrhart, Puppe, Reiß
Supplementary Courses (Election: )			
T-WIWI-113469	<a href="#">Advanced Corporate Finance</a>	4,5 CR	Ruckes
T-WIWI-102647	<a href="#">Asset Pricing</a>	4,5 CR	Ruckes, Uhrig-Homburg
T-WIWI-109050	<a href="#">Corporate Risk Management</a>	4,5 CR	Ruckes
T-WIWI-102623	<a href="#">Financial Intermediation</a>	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.

**Prerequisites**

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

**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

**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**

Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.



## M

## 6.24 Module: Economics &amp; Management [M-WIWI-106410]

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** Economics

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	English	4	3

Compulsory Elective Courses (Election: )			
T-WIWI-102885	<a href="#">Advanced Management Accounting</a>	4,5 CR	Wouters
T-WIWI-113465	<a href="#">Designing Interactive Systems: Human-AI Interaction</a>	4,5 CR	Mädche
T-WIWI-107501	<a href="#">Energy Market Engineering</a>	4,5 CR	Weinhardt
T-WIWI-105781	<a href="#">Incentives in Organizations</a>	4,5 CR	Nieken
T-WIWI-111099	<a href="#">Judgement and Decision Making</a>	4,5 CR	Scheibehenne
T-WIWI-107043	<a href="#">Liberalised Power Markets</a>	5,5 CR	Fichtner
T-WIWI-107720	<a href="#">Market Research</a>	4,5 CR	Klarmann
T-WIWI-107464	<a href="#">Smart Energy Infrastructure</a>	5,5 CR	Ardone, Pustisek

**Competence Certificate**

The assessment is described for each course of this module. The overall grade of the module is formed from the ECTS-weighted grades of the partial examinations and truncated after the first decimal place.

**Prerequisites**

Please check the individual courses for any prerequisites and recommendations.

**Competence Goal**

The student

- understands strategic and operational decisions in management,
- analyzes problems in companies and applies economic models and methods for their modeling and analysis,
- analyzes strategic and operational management decisions,
- applies empirical methods for the evaluation of management decisions.

**Content**

The module "Economics & Management" deals with issues in the field of management. In the courses, various aspects of management are presented, analyzed and discussed. The focal points covered vary depending on the course. In principle, all courses can be freely combined with each other. Recommended combinations are:

- Incentives in Organizations & Advanced Management Accounting
- Market Research & Judgement and Decision Making
- Judgement and Decision Making & Incentives in Organizations
- Designing Interactive Systems & Incentives in Organizations
- Designing Interactive Systems & Judgement and Decision Making
- Liberalized Power Markets & Quantitative Methods in Energy Economics & Energy Market Engineering
- Liberalized Power Markets & Quantitative Methods in Energy Economics & (Smart) Energy Infrastructure

**Workload**

The total workload for this module is approximately 270 hours.

## M

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

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

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each term	<b>Duration</b> 1 term	<b>Language</b> German	<b>Level</b> 4	<b>Version</b> 3
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<b>Compulsory Elective Courses (Election: at least 9 credits)</b>			
T-WIWI-107501	<a href="#">Energy Market Engineering</a>	4,5 CR	Weinhardt
T-WIWI-107503	<a href="#">Energy Networks and Regulation</a>	4,5 CR	Weinhardt
T-WIWI-107504	<a href="#">Smart Grid Applications</a>	4,5 CR	Weinhardt
T-WIWI-113726	<a href="#">Special Topics in Information Systems</a>	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.

**Prerequisites**

None.

**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.

**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 approx. 270 hours (9 CP). The allocation is based on the credit points of the courses in the module. The workload for courses with 4.5 CP is approx. 135 hours.

The total number of hours per course results from the time required to attend the lectures and exercises, as well as the examination times and the time required to achieve the qualification objectives of the module for an average student for an average performance.

## M

## 6.26 Module: Electives in Informatics [M-WIWI-101630]

**Responsible:** Dr.-Ing. Tobias Käfer  
 Prof. Dr. Sanja Lazarova-Molnar  
 Prof. Dr. Andreas Oberweis  
 Prof. Dr. Harald Sack  
 Prof. Dr. Ali Sunyaev  
 Prof. Dr. Melanie Volkamer  
 Prof. Dr.-Ing. Johann Marius Zöllner

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

**Part of:** Electives (Informatics)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	20

Compulsory Elective Area (Election: )			
T-WIWI-113629	Agent-Based Modelling and Simulation	4,5 CR	Lazarova-Molnar
T-WIWI-110339	Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services	4,5 CR	Sunyaev
T-WIWI-102680	Computational Economics	4,5 CR	Shukla
T-WIWI-113363	Collective Perception in Autonomous Driving	4,5 CR	Vinel
T-WIWI-112690	Cooperative Autonomous Vehicles	4,5 CR	Vinel
T-WIWI-109248	Critical Information Infrastructures	4,5 CR	Sunyaev
T-WIWI-109246	Digital Health	4,5 CR	Sunyaev
T-WIWI-113059	Human Factors in Autonomous Driving	4,5 CR	Vinel
T-WIWI-109270	Human Factors in Security and Privacy	4,5 CR	Volkamer
T-WIWI-102661	Database Systems and XML	4,5 CR	Oberweis
T-WIWI-110346	Supplement Enterprise Information Systems	4,5 CR	Oberweis
T-WIWI-110372	Supplement Software- and Systemsengineering	4,5 CR	Oberweis
T-WIWI-106423	Information Service Engineering	4,5 CR	Sack
T-WIWI-102666	Knowledge Discovery	4,5 CR	Käfer
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-112685	Modeling and Simulation	4,5 CR	Lazarova-Molnar
T-WIWI-102697	Business Process Modelling	4,5 CR	Oberweis
T-WIWI-102679	Nature-Inspired Optimization Methods	4,5 CR	Shukla
T-WIWI-109799	Process Mining	4,5 CR	Oberweis
T-WIWI-110848	Semantic Web Technologies	4,5 CR	Käfer
T-WIWI-102895	Software Quality Management	4,5 CR	Oberweis
Seminars and Advanced Labs (Election: )			
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-111126	Advanced Lab Blockchain Hackathon (Master)	4,5 CR	Sunyaev
T-WIWI-111125	Advanced Lab Sociotechnical Information Systems Development (Master)	4,5 CR	Sunyaev
T-WIWI-110548	Advanced Lab Informatics (Master)	4,5 CR	Professorenschaft des Instituts AIFB
T-WIWI-112914	Advanced Lab Realization of Innovative Services (Master)	4,5 CR	Oberweis
T-WIWI-108439	Advanced Lab Security, Usability and Society	4,5 CR	Volkamer
T-WIWI-109786	Advanced Lab Security	4,5 CR	Volkamer
T-WIWI-109985	Project Lab Cognitive Automobiles and Robots	5 CR	Zöllner
T-WIWI-109983	Project Lab Machine Learning	5 CR	Zöllner

T-WIWI-113026	Trustworthy Emerging Technologies	4,5 CR	Sunyaev
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### 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. For passing the module exam in every singled partial exam the respective minimum requirements has to be achieved.

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.

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.

### Prerequisites

None.

### Competence Goal

The student

- has the ability to master methods and tools in a complex discipline and to demonstrate innovativeness regarding the methods used,
- knows the principles and methods in the context of their application in practice,
- is able to grasp and apply the rapid developments in the field of computer science, which are encountered in work life, quickly and correctly, based on a fundamental understanding of the concepts and methods of computer science,
- is capable of finding and defending arguments for solving problems.

### Content

The thematic focus will be based on the choice of courses in the areas of Applied Technical Cognitive Systems, Business Information Systems, Critical Information Infrastructures, Information Service Engineering, Security - Usability - Society or Web Science.

### Workload

The total workload for this module is approximately 270 hours.

## M

**6.27 Module: Electronic Markets [M-WIWI-101409]**

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	9

Compulsory Elective Courses (Election: at least 9 credits)			
T-WIWI-102762	Business Dynamics	4,5 CR	Geyer-Schulz, Glenn
T-WIWI-112823	Platform & Market Engineering: Commerce, Media, and Digital Democracy	4,5 CR	Weinhardt
T-WIWI-105946	Price Management	4,5 CR	Geyer-Schulz, Glenn
T-WIWI-113147	Telecommunications and Internet – Economics and Policy	4,5 CR	Mitusch

**Competence Certificate**

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

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

**Prerequisites**

None

**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.

**Content**

What are the conditions that make electronic markets develop, and how can one analyze 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

**Workload**

The total workload for this module is approx. 270 hours (9 credits). The distribution is based on the credit points of the courses in the module. The workload for courses with 4.5 credits is approx. 135 hours.

The total number of hours per course is calculated from the time required to attend the lectures and exercises, as well as the examination times and the time required for an average student to achieve the learning objectives of the module for an average performance.

**Recommendation**

None

## M

## 6.28 Module: Emphasis in Informatics [M-WIWI-101628]

**Responsible:** Dr.-Ing. Tobias Käfer  
 Prof. Dr. Sanja Lazarova-Molnar  
 Prof. Dr. Andreas Oberweis  
 Prof. Dr. Harald Sack  
 Prof. Dr. Ali Sunyaev  
 Prof. Dr. Melanie Volkamer  
 Prof. Dr.-Ing. Johann Marius Zöllner

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

**Part of:** Electives (Informatics)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	20

Compulsory Elective Area (Election: between 1 and 3 items)			
T-WIWI-113629	Agent-Based Modelling and Simulation	4,5 CR	Lazarova-Molnar
T-WIWI-110339	Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services	4,5 CR	Sunyaev
T-WIWI-102680	Computational Economics	4,5 CR	Shukla
T-WIWI-113363	Collective Perception in Autonomous Driving	4,5 CR	Vinel
T-WIWI-112690	Cooperative Autonomous Vehicles	4,5 CR	Vinel
T-WIWI-109248	Critical Information Infrastructures	4,5 CR	Sunyaev
T-WIWI-109246	Digital Health	4,5 CR	Sunyaev
T-WIWI-113059	Human Factors in Autonomous Driving	4,5 CR	Vinel
T-WIWI-109270	Human Factors in Security and Privacy	4,5 CR	Volkamer
T-WIWI-102661	Database Systems and XML	4,5 CR	Oberweis
T-WIWI-110346	Supplement Enterprise Information Systems	4,5 CR	Oberweis
T-WIWI-110372	Supplement Software- and Systemsengineering	4,5 CR	Oberweis
T-WIWI-106423	Information Service Engineering	4,5 CR	Sack
T-WIWI-102666	Knowledge Discovery	4,5 CR	Käfer
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-112685	Modeling and Simulation	4,5 CR	Lazarova-Molnar
T-WIWI-102697	Business Process Modelling	4,5 CR	Oberweis
T-WIWI-102679	Nature-Inspired Optimization Methods	4,5 CR	Shukla
T-WIWI-109799	Process Mining	4,5 CR	Oberweis
T-WIWI-110848	Semantic Web Technologies	4,5 CR	Käfer
T-WIWI-102895	Software Quality Management	4,5 CR	Oberweis
Seminars and Advanced Labs (Election: )			
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-111126	Advanced Lab Blockchain Hackathon (Master)	4,5 CR	Sunyaev
T-WIWI-111125	Advanced Lab Sociotechnical Information Systems Development (Master)	4,5 CR	Sunyaev
T-WIWI-110548	Advanced Lab Informatics (Master)	4,5 CR	Professorenschaft des Instituts AIFB
T-WIWI-112914	Advanced Lab Realization of Innovative Services (Master)	4,5 CR	Oberweis
T-WIWI-108439	Advanced Lab Security, Usability and Society	4,5 CR	Volkamer
T-WIWI-109786	Advanced Lab Security	4,5 CR	Volkamer
T-WIWI-109985	Project Lab Cognitive Automobiles and Robots	5 CR	Zöllner
T-WIWI-109983	Project Lab Machine Learning	5 CR	Zöllner

T-WIWI-113026	Trustworthy Emerging Technologies	4,5 CR	Sunyaev
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**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.

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.

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.

**Prerequisites**

None.

**Competence Goal**

The student

- has the ability to master methods and tools in a complex discipline and to demonstrate innovativeness regarding the methods used,
- knows the principles and methods in the context of their application in practice,
- is able to grasp and apply the rapid developments in the field of computer science, which are encountered in work life, quickly and correctly, based on a fundamental understanding of the concepts and methods of Informatics,
- is capable of finding and defending arguments for solving problems.

**Content**

The thematic focus will be based on the choice of courses in the areas of Applied Technical Cognitive Systems, Business Information Systems, Critical Information Infrastructures, Information Service Engineering, Security - Usability - Society or Web Science.

**Workload**

The total workload for this module is approximately 270 hours.



## M

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

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	8

Mandatory			
T-WIWI-107043	Liberalised Power Markets	5,5 CR	Fichtner
Supplementary Courses (Election: )			
T-WIWI-107501	Energy Market Engineering	4,5 CR	Weinhardt
T-WIWI-112151	Energy Trading and Risk Management	3,5 CR	N.N.
T-WIWI-108016	Simulation Game in Energy Economics	3,5 CR	Genoese
T-WIWI-107446	Quantitative Methods in Energy Economics	3,5 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.

**Prerequisites**

The lecture Liberalised Power Markets has to be examined.

**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.

**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

**Workload**

The total workload for this module is approx. 270 hours (9 credits). The allocation is based on the credit points of the courses in the module. The workload for courses with 3.5 credits is approx. 105 hours, for courses with 5.5 credits approx. 165 hours.

The total number of hours per course is calculated from the time required to attend the lectures and exercises, as well as the examination times and the time required for an average student to achieve the learning objectives of the module for an average performance.

**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.

## M

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

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

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each term	<b>Duration</b> 1 term	<b>Language</b> German/English	<b>Level</b> 4	<b>Version</b> 5
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<b>Compulsory Elective Courses (Election: at least 9 credits)</b>			
T-WIWI-102793	<a href="#">Efficient Energy Systems and Electric Mobility</a>	3,5 CR	Jochem
T-WIWI-102650	<a href="#">Energy and Environment</a>	3,5 CR	Karl
T-WIWI-113073	<a href="#">Machine Learning and Optimization in Energy Systems</a>	3,5 CR	Fichtner
T-WIWI-107464	<a href="#">Smart Energy Infrastructure</a>	5,5 CR	Ardone, Pustisek
T-WIWI-102695	<a href="#">Heat Economy</a>	3,5 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.

**Prerequisites**

None

**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.

**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 approx. 270 hours (9 credits). The allocation is based on the credit points of the courses in the module. The workload for courses with 3,5 credits is approx. 105 hours, and for courses with 5,5 credits approx. 165 hours.

The total number of hours per course is calculated from the time required to attend the lectures and exercises, as well as the examination times and the time required for an average student to achieve the learning objectives of the module for an average performance.

## M

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

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	14

Mandatory part (Election: 1 item)			
T-WIWI-102864	Entrepreneurship	3 CR	Terzidis
Compulsory Elective Courses (Election: between 1 and 2 items)			
T-WIWI-102866	Design Thinking	3 CR	Terzidis
T-WIWI-113151	Entrepreneurship Seasonal School	3 CR	Terzidis
T-WIWI-102865	Business Planning	3 CR	Terzidis
T-WIWI-110985	International Business Development and Sales	6 CR	Casenave , Klarmann, Terzidis
T-WIWI-109064	Joint Entrepreneurship Summer School	6 CR	Terzidis
T-WIWI-111561	Startup Experience	6 CR	Terzidis
Supplementary Courses (Election: between 0 and 1 items)			
T-WIWI-102894	Entrepreneurship Research	3 CR	Terzidis
T-MACH-112882	Innovation2Business – Innovation Strategy in the Industrial Corporate Practice	4 CR	Albers
T-WIWI-102852	Case Studies Seminar: Innovation Management	3 CR	Weissenberger-Eibl
T-WIWI-102893	Innovation Management: Concepts, Strategies and Methods	3 CR	Weissenberger-Eibl
T-WIWI-102612	Managing New Technologies	3 CR	Reiß

**Competence Certificate**

The module examination takes place in the form of partial examinations (according to §4, 1-3 SPO) on

1. the Entrepreneurship lecture (3 CP),
2. one of the seminars of the Chair of Entrepreneurship and Technology Management (3 CP or 6 CP) and, if applicable
3. another course listed in the module.

The seminars of the chair are

- Startup Experience
- Design Thinking
- Business planning for founders
- Entrepreneurship research (this can be credited mainly in the seminar module, but also in the entrepreneurship module)
- Joint Entrepreneurship School
- Entrepreneurship Seasonal School
- International Business Development and Sales
- Founding in the field of IT security
- Entrepreneurial Leadership & Innovation Management

The latter five seminars take place irregularly, as they are offered as part of projects.

The assessment of success is described for each course in the module. For courses with 3 CP in the compulsory elective and supplementary courses, 1/2 of the overall grade results from the entrepreneurship lecture, 1/4 from one of the chair's seminars with 3 CP and 1/4 from another course with 3 CP permitted in the module. If a course with 6 CP is selected in the compulsory elective or supplementary offer, this is included in the overall grade with a weighting of 1/2. The overall grade is cut off after the first decimal place.

**Prerequisites**

None

**Competence Goal**

Students are familiar with the basics and contents of entrepreneurship and ideally are able to start a company during or after their studies. The courses are therefore structured sequentially in modules, although in principle they can also be attended in parallel. In this way, the skills are taught to generate business ideas, to develop inventions into innovations, to write business plans for start-ups and to successfully establish a company. In the lecture, the basics of entrepreneurship will be developed, in the seminars, individual contents will be deepened. The overall learning objective is to enable students to develop and implement business ideas.

**Content**

The lectures form the basis of the module and give an overview of the overall topic. The seminars deepen the phases of the foundation processes, in particular the identification of opportunities, the development of a value proposition (especially based on inventions and technical innovations), the design of a business model, business planning, the management of a start-up, the implementation of a vision as well as the acquisition of resources and the handling of risks. The lecture Entrepreneurship provides an overarching and connecting framework for this.

**Annotation**

Please note: Seminars offered by Prof. Terzidis (or the members of his research group) are not eligible for crediting in a seminar module of the WiWi degree programs. Exception: Seminar "Entrepreneurship Research".

**Workload**

Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.

**Recommendation**

None

## M

**6.32 Module: Environmental Economics [M-WIWI-101468]**

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German	4	2

Compulsory Elective Courses (Election: at least 9 credits)			
T-WIWI-102650	<a href="#">Energy and Environment</a>	3,5 CR	Karl
T-WIWI-100007	<a href="#">Transport Economics</a>	4,5 CR	Mitusch, Szimba
T-WIWI-102615	<a href="#">Environmental Economics and Sustainability</a>	3 CR	Walz
T-WIWI-102616	<a href="#">Environmental and Resource Policy</a>	4 CR	Walz
T-BGU-111102	<a href="#">Environmental Law</a>	3 CR	Smeddinck

**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.

**Prerequisites**

None

**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

**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.

**Workload**

Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.

**Recommendation**

Knowledge of microeconomics is a prerequisite. For this reason, successful participation in the course *Economics I (Microeconomics)* [2600012] or a comparable course is strongly recommended.

## M

**6.33 Module: Experimental Economics [M-WIWI-101505]**

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

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each term	<b>Duration</b> 2 terms	<b>Language</b> German/English	<b>Level</b> 4	<b>Version</b> 5
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<b>Compulsory Elective Courses (Election: 2 items)</b>			
T-WIWI-102614	<a href="#">Experimental Economics</a>	4,5 CR	Weinhardt
T-WIWI-105781	<a href="#">Incentives in Organizations</a>	4,5 CR	Nieken
T-WIWI-102862	<a href="#">Predictive Mechanism and Market Design</a>	4,5 CR	Reiß
T-WIWI-102863	<a href="#">Topics in Experimental Economics</a>	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.

**Prerequisites**

None.

**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.

**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.

**Annotation**

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

**Workload**

Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.

**Recommendation**

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

## M

## 6.34 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:** [Electives \(Business Administration\)](#)

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

Compulsory Elective Courses (Election: 9 credits)			
T-WIWI-102643	<a href="#">Derivatives</a>	4,5 CR	Uhrig-Homburg
T-WIWI-102621	<a href="#">Valuation</a>	4,5 CR	Ruckes
T-WIWI-102647	<a href="#">Asset Pricing</a>	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.

**Prerequisites**

None

**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

**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 approx. 270 hours (9 credits). The distribution is based on the credit points of the courses in the module. The workload for courses with 4.5 credits is approx. 135 hours.

The total number of hours per course is calculated from the time required to attend the lectures and exercises, as well as the examination times and the time required for an average student to achieve the learning objectives of the module for an average performance.

## M

## 6.35 Module: Foundations for Advanced Financial -Quant and -Machine Learning Research [M-WIWI-105894]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	see Annotations	1 term	English	4	1

Mandatory			
T-WIWI-111846	<a href="#">Fundamentals for Financial -Quant and -Machine Learning Research</a>	9 CR	Ulrich

### Competence Certificate

**Due to the professor's research sabbatical, the BSc module "Financial Data Science" and MSc module "Foundations for Advanced Financial -Quant and -Machine Learning Research" and the MSc module "Advanced Machine Learning and Data Science" along with the respective examinations will not be offered in SS2023. Bachelor and Master thesis projects are not affected and will be supervised.**

The module examination is an alternative exam assessment with a maximum score of 100 points to be achieved. These points are distributed over 4 worksheets to be submitted during the semester. The worksheets cover the respective material of the module and are handed out, worked on and assessed in lecture weeks 3 (10 points), 6 (20 points), 9 (30 points) and 12 (40 points).

The module-wide exam (all 4 worksheets) must be taken in the same semester.

The worksheets are a mixture of analytical tasks and programming tasks with financial data.

### Competence Goal

This MSc module teaches students fundamental stats and analytics concepts, as well necessary financial economic intuition, necessary to identify, design and execute interesting research questions in quant finance and financial machine learning.

Topics include: Maximum Likelihood learning of arma-garch models, expectation maximization learning applied to stochastic volatility and valuation models, Kalman filter techniques to learn latent states, estimation of affine jump diffusion models with options and higher-order moments, stochastic calculus, dynamic modeling of asset markets (bond, equity, options), equilibrium determination of risk premiums, risk premiums for higher moment risk, risk decomposition (fundamental vs idiosyncratic), option-implied return distributions, mixture-density-networks and neural nets.

### Content

Learning Objectives: Skills and understanding of how to successfully set-up, execute and interpret financial data driven research with the following methods: MLE, Kalman Filter, Expectation Maximization, Option Pricing, dynamic asset pricing theory, backward-looking historical return densities, forward-looking options-implied return densities, mixture-density-network, neural networks. Programming is not taught in this course, yet, some graded and non-graded exercises might make heavy use of software based data analysis. See the course's pre-requisites and comments in the modul handbook.

### Annotation

- Strongly recommended to have good knowledge in financial econometrics (MLE, OLS, GLS, ARMA-GARCH), mathematics (differential equations, difference equations and optimization), investments (CAPM, factor models), asset pricing (SDF, SDF pricing), derivatives (Black-Scholes, risk-neutral pricing), and programming of statistical concepts (Java or R or Python or Matlab or C or ...)
- Strongly recommended to have a strong interest for interdisciplinary research work in statistics, programming, applied math and financial economics.
- Students lacking the prior knowledge might find the resources of the Chair helpful: [www.youtube.com/c/cram-kit](http://www.youtube.com/c/cram-kit).

### Workload

The total workload for this course is approximately 270 hours. This is for a student with the appropriate prior knowledge in financial econometrics, finance, mathematics and programming. Students without programming experience of statistical concepts will need to invest extra time. Students who have struggled in math- or programming- or finance- oriented classes, will find this course very challenging. Please check the pre-requisites and comments in the module handbook.



## M

**6.36 Module: Growth and Agglomeration [M-WIWI-101496]**

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

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each term	<b>Duration</b> 1 term	<b>Language</b> German/English	<b>Level</b> 4	<b>Version</b> 5
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<b>Compulsory Elective Courses (Election: 9 credits)</b>			
T-WIWI-109194	<a href="#">Dynamic Macroeconomics</a>	4,5 CR	Brumm
T-WIWI-112816	<a href="#">Growth and Development</a>	4,5 CR	Ott
T-WIWI-103107	<a href="#">Spatial Economics</a>	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.

**Prerequisites**

None

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-102708 - Economics I: Microeconomics](#) must have been started.
2. The course [T-WIWI-102709 - Economics II: Macroeconomics](#) must have been started.

**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

**Content**

The module includes the contents of the lectures *Endogenous Growth Theory*, *Spatial Economics* and *Dynamic Macroeconomics*. While the first lecture focuses on dynamic programming in modern macroeconomics, the other two lectures are more formal and analytical.

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

**Workload**

Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.

**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.

## M

**6.37 Module: Incentives, Interactivity & Decisions in Organizations [M-WIWI-105923]**

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	2

Elective Offer (Election: )			
T-WIWI-105781	<a href="#">Incentives in Organizations</a>	4,5 CR	Nieken
T-WIWI-111912	<a href="#">Advanced Topics in Digital Management</a>	3 CR	Nieken
T-WIWI-111913	<a href="#">Advanced Topics in Human Resource Management</a>	3 CR	Nieken
T-WIWI-111806	<a href="#">Behavioral Lab Exercise</a>	4,5 CR	Nieken, Scheibehenne
T-WIWI-113465	<a href="#">Designing Interactive Systems: Human-AI Interaction</a>	4,5 CR	Mädche
T-WIWI-111099	<a href="#">Judgement and Decision Making</a>	4,5 CR	Scheibehenne
T-WIWI-111385	<a href="#">Responsible Artificial Intelligence</a>	4,5 CR	Weinhardt
T-WIWI-102614	<a href="#">Experimental Economics</a>	4,5 CR	Weinhardt
T-WIWI-111109	<a href="#">KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics</a>	4,5 CR	Weinhardt

**Competence Certificate**

The assessment is carried out as partial exams of the courses in this module. The assessment procedures are described for each course in the module separately.

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

**Prerequisites**

Please refer to the course descriptions for potential restrictions regarding an individual course.

**Competence Goal**

The student

- understands and analyses challenges and objectives within organizations
- applies economic models and empirical methods to analyze and solve challenges with a focus on the workplace and future of work
- understands the impact of digitalization and new information and communication technology on the work life and management decisions
- knows how to apply scientific research methods and understands the underlying problems

**Content**

The module „Incentives, Interactivity & Decisions in Organizations” offers an interdisciplinary approach to study incentive structures, the role of interactivity in information systems, and decision making in organizations. The module specifically focuses on topics related to the workplace and the future of work in organizations. The topics range from designing incentive systems and interactive systems to leadership, decision making, as well as understanding human behavior. All courses in the module foster active participation and allow students to learn state-of-the-art research methods and apply them to real-world challenges.

**Workload**

Total workload for 9 credits: approx. 270 hours.

**Recommendation**

Knowledge of Human Resource Management, microeconomics, game theory, and statistics is recommended.

## M

**6.38 Module: Industrial Production II [M-WIWI-101471]**

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

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each winter term	<b>Duration</b> 1 term	<b>Language</b> German/English	<b>Level</b> 4	<b>Version</b> 6
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<b>Mandatory</b>			
T-WIWI-102631	<a href="#">Planning and Management of Industrial Plants</a>	5,5 CR	Schultmann
<b>Supplementary Courses (Election: at most 1 item)</b>			
T-WIWI-102763	<a href="#">Supply Chain Management with Advanced Planning Systems</a>	3,5 CR	Bosch, Göbelt
T-WIWI-102826	<a href="#">Risk Management in Industrial Supply Networks</a>	3,5 CR	Schultmann
T-WIWI-103134	<a href="#">Project Management</a>	3,5 CR	Schultmann
<b>Supplementary Courses (Election: at most 1 item)</b>			
T-WIWI-102634	<a href="#">Emissions into the Environment</a>	3,5 CR	Karl
T-WIWI-112103	<a href="#">Global Manufacturing</a>	3,5 CR	Sasse
T-WIWI-113107	<a href="#">Life Cycle Assessment – Basics and Application Possibilities in an Industrial Context</a>	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.

**Prerequisites**

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

**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.

**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

**6.39 Module: Industrial Production III [M-WIWI-101412]**

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each summer term	1 term	German/English	4	6

Mandatory			
T-WIWI-102632	<a href="#">Production and Logistics Management</a>	5,5 CR	Schultmann
Supplementary Courses from Module Industrial Production II (Election: at most 1 item)			
T-WIWI-102634	<a href="#">Emissions into the Environment</a>	3,5 CR	Karl
T-WIWI-112103	<a href="#">Global Manufacturing</a>	3,5 CR	Sasse
T-WIWI-113107	<a href="#">Life Cycle Assessment – Basics and Application Possibilities in an Industrial Context</a>	3,5 CR	Schultmann
Supplementary Courses (Election: at most 1 item)			
T-WIWI-102763	<a href="#">Supply Chain Management with Advanced Planning Systems</a>	3,5 CR	Bosch, Göbelt
T-WIWI-102826	<a href="#">Risk Management in Industrial Supply Networks</a>	3,5 CR	Schultmann
T-WIWI-103134	<a href="#">Project Management</a>	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.

**Prerequisites**

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

**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.

**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

**6.40 Module: Informatics & Machine Learning [M-WIWI-105880]**

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

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each term	<b>Duration</b> 2 terms	<b>Language</b> German/English	<b>Level</b> 4	<b>Version</b> 2
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<b>Compulsory Elective Area (Election: )</b>			
T-WIWI-102661	<a href="#">Database Systems and XML</a>	4,5 CR	Oberweis
T-WIWI-106423	<a href="#">Information Service Engineering</a>	4,5 CR	Sack
T-WIWI-102666	<a href="#">Knowledge Discovery</a>	4,5 CR	Käfer
T-WIWI-106340	<a href="#">Machine Learning 1 - Basic Methods</a>	4,5 CR	Zöllner
T-WIWI-106341	<a href="#">Machine Learning 2 – Advanced Methods</a>	4,5 CR	Zöllner
T-WIWI-109799	<a href="#">Process Mining</a>	4,5 CR	Oberweis
T-WIWI-110848	<a href="#">Semantic Web Technologies</a>	4,5 CR	Käfer

**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.

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.

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**

The student

- has the ability to master methods and tools in a complex discipline and to demonstrate innovativeness regarding the methods used,
- knows the principles and methods in the context of their application in practice,
- is able to grasp and apply the rapid developments in the field of Informatics, which are encountered in work life, quickly and correctly, based on a fundamental understanding of the concepts and methods of Informatics,
- is capable of finding and defending arguments for solving problems.

**Content**

The thematic focus will be based on the choice of courses in the areas of Applied Technical Cognitive Systems, Business Information Systems, Information Service Engineering or Web Science.

**Workload**

The total workload for this module is approximately 270 hours. The total number of hours per course is calculated from the time required to attend the lectures and exercises, as well as the examination times and the time required for an average student to achieve the learning objectives of the module.

## M

**6.41 Module: Information Engineering [M-WIWI-101411]**

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	9

Supplementary Courses (Election: )			
T-WIWI-107501	<a href="#">Energy Market Engineering</a>	4,5 CR	Weinhardt
T-WIWI-112823	<a href="#">Platform &amp; Market Engineering: Commerce, Media, and Digital Democracy</a>	4,5 CR	Weinhardt
T-WIWI-113727	<a href="#">Special Topics in Information Systems</a>	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**

The student

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

**Content**

In the courses of the module the student can deepen his knowledge on the one hand on the design and operation of markets and on the other hand on the impact of digital goods in network industries regarding the pricing policies, business strategies and regulation issues. If chosen, the course *Special Topics in Information Engineering & Management* additionally provides an opportunity of practical research in the aforementioned range of subjects.

**Annotation**

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

**Workload**

Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.

## M

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

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	English	4	5

Compulsory Elective Courses (Election: at least 9 credits)			
T-WIWI-105777	<a href="#">Business Intelligence Systems</a>	4,5 CR	Mädche
T-WIWI-113465	<a href="#">Designing Interactive Systems: Human-AI Interaction</a>	4,5 CR	Mädche
T-WIWI-113459	<a href="#">Practical Seminar: Human-Centered Systems</a>	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.

**Prerequisites**

None

**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

**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

**6.43 Module: Innovation and Growth [M-WIWI-101478]**

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	English	4	5

Compulsory Elective Courses (Election: between 9 and 10 credits)			
T-WIWI-109194	<a href="#">Dynamic Macroeconomics</a>	4,5 CR	Brumm
T-WIWI-112822	<a href="#">Economics of Innovation</a>	4,5 CR	Ott
T-WIWI-112816	<a href="#">Growth and Development</a>	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.

**Prerequisites**

None

**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

**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.

**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.

**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.



## M

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

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	English	4	4

Compulsory Elective Courses (Election: between 9 and 10 credits)			
T-WIWI-112822	<a href="#">Economics of Innovation</a>	4,5 CR	Ott
T-WIWI-102906	<a href="#">Methods in Economic Dynamics</a>	1,5 CR	Ott
T-WIWI-102789	<a href="#">Seminar in Economic Policy</a>	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.

**Prerequisites**

None

**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

**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.

**Workload**

The total workload for this module is approx. 270 hours (9 credits). The allocation is based on the credit points of the courses in the module.

The total number of hours per course results from the time required to attend the lectures, as well as the examination times and the time required for an average student to achieve the learning objectives of the module for an average performance.

**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.

## M

**6.45 Module: Innovation Management [M-WIWI-101507]**

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	12

Mandatory			
T-WIWI-102893	<a href="#">Innovation Management: Concepts, Strategies and Methods</a>	3 CR	Weissenberger-Eibl
Compulsory Elective Courses (Election: 1 item)			
T-WIWI-113664	<a href="#">Design Thinking in Practice</a>	3 CR	Scheydt
T-WIWI-113663	<a href="#">Development of Sustainable, Digital Business Models</a>	3 CR	Duwe
T-WIWI-111823	<a href="#">Successful Transformation Through Innovation</a>	3 CR	Busch
T-WIWI-102852	<a href="#">Case Studies Seminar: Innovation Management</a>	3 CR	Weissenberger-Eibl
T-WIWI-113849	<a href="#">AI Innovation Ecosystems</a>	3 CR	Beyer, Scheydt
T-WIWI-113716	<a href="#">Leadership and Innovation</a>	3 CR	Schulz-Kamm
T-WIWI-110263	<a href="#">Methods in Innovation Management</a>	3 CR	Weissenberger-Eibl
Supplementary Courses (Election: 1 item)			
T-WIWI-102866	<a href="#">Design Thinking</a>	3 CR	Terzidis
T-WIWI-113664	<a href="#">Design Thinking in Practice</a>	3 CR	Scheydt
T-WIWI-102864	<a href="#">Entrepreneurship</a>	3 CR	Terzidis
T-WIWI-111823	<a href="#">Successful Transformation Through Innovation</a>	3 CR	Busch
T-WIWI-102852	<a href="#">Case Studies Seminar: Innovation Management</a>	3 CR	Weissenberger-Eibl
T-WIWI-113849	<a href="#">AI Innovation Ecosystems</a>	3 CR	Beyer, Scheydt
T-WIWI-113716	<a href="#">Leadership and Innovation</a>	3 CR	Schulz-Kamm
T-WIWI-110263	<a href="#">Methods in Innovation Management</a>	3 CR	Weissenberger-Eibl

**Competence Certificate**

The module examination takes the form of partial examinations (according to §4(2), 1-3 SPO) on the core course and other courses of the module totaling at least 9 CP. The assessment of success is described for each course of the module.

The overall grade is based 50% on the lecture "Innovation Management: Concepts, Strategies and Methods", 25% on one of the seminars of the Chair of Innovation and Technology Management and 25% on another course permitted in the module. The overall grade is cut off after the first decimal place.

**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.

**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.

**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.

**Annotation**

Seminars offered by Prof. Terzidis (or the members of his research group) are not eligible for crediting in a seminar module of the WiWi degree programs. Exception: Seminar "Entrepreneurship Research".

**Workload**

Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.

**Recommendation**

None

## M

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

**Responsible:** N.N.  
**Organisation:** KIT Department of Informatics  
**Part of:** Electives (Law and Sociology)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	5

Intellectual Property Law (Election: at least 1 item as well as at least 9 credits)			
T-INFO-101308	Copyright	3 CR	N.N.
T-INFO-101313	Trademark and Unfair Competition Law	3 CR	Matz
T-INFO-101307	Internet Law	3 CR	N.N.
T-INFO-108462	Selected Legal Issues of Internet Law	3 CR	N.N.
T-INFO-101310	Patent Law	3 CR	Werner

**Competence Certificate**

see partial achievements

**Prerequisites**

None

**Competence Goal**

The student

- has detailed knowledge of the main intellectual property rights,
- analyzes and evaluates complex issues and leads them to a legal solution,
- translates the legal principles into contracts on the use of intellectual property and solves more complex infringement cases
- knows and understands the main features of registration procedures and has a broad overview of legal issues raised by the Internet.
- analyzes, assesses and evaluates relevant legal issues from a legal, information technology and legal policy perspective, economic and legal policy perspectives

**Content**

The module provides knowledge in the core areas of intellectual property law and core topics of internet law. It explains the requirements and the necessary procedure for protecting inventions and industrial marks nationally and internationally. In addition, the necessary know-how is taught to use intellectual property rights and to defend intellectual property rights against attacks by third parties.

**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 3 credits is about 90 hours. The total number of hours per course results from the effort required to attend the lectures as well as the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.

## M

**6.47 Module: Management Accounting [M-WIWI-101498]**

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	English	4	3

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.

**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**

Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.

## M

**6.48 Module: Market Engineering [M-WIWI-101446]**

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

**Credits**  
9

**Grading scale**  
Grade to a tenth

**Recurrence**  
Each term

**Duration**  
1 term

**Language**  
German/English

**Level**  
4

**Version**  
9

<b>Mandatory</b>			
T-WIWI-112823	<a href="#">Platform &amp; Market Engineering: Commerce, Media, and Digital Democracy</a>	4,5 CR	Weinhardt
<b>Supplementary Courses (Election: 4,5 credits)</b>			
T-WIWI-102613	<a href="#">Auction Theory</a>	4,5 CR	Ehrhart
T-WIWI-113160	<a href="#">Digital Democracy</a>	4,5 CR	Fegert
T-WIWI-110797	<a href="#">eFinance: Information Systems for Securities Trading</a>	4,5 CR	Weinhardt
T-WIWI-107501	<a href="#">Energy Market Engineering</a>	4,5 CR	Weinhardt
T-WIWI-107503	<a href="#">Energy Networks and Regulation</a>	4,5 CR	Weinhardt
T-WIWI-102614	<a href="#">Experimental Economics</a>	4,5 CR	Weinhardt
T-WIWI-111109	<a href="#">KD<sup>2</sup>Lab Hands-On Research Course: New Ways and Tools in Experimental Economics</a>	4,5 CR	Weinhardt
T-WIWI-107504	<a href="#">Smart Grid Applications</a>	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.

**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.

**Workload**

The total workload for this module is approx. 270 hours (9 credits). The distribution is based on the credit points of the courses in the module. The workload for courses with 4.5 credits is approx. 135 hours for courses with 5 credits approx. 150 hours.

The total number of hours per course results from the time required to attend the lectures and exercises, as well as the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.

**Recommendation**

None

## M

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

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

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each summer term	<b>Duration</b> 1 term	<b>Language</b> English	<b>Level</b> 4	<b>Version</b> 8
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<b>Compulsory Elective Courses (Election: )</b>			
T-WIWI-112693	Digital Marketing	4,5 CR	Kupfer
T-WIWI-106981	Digital Marketing and Sales in B2B	1,5 CR	Klarmann, Konhäuser
T-WIWI-110985	International Business Development and Sales	6 CR	Casenave , Klarmann, Terzidis
T-WIWI-111099	Judgement and Decision Making	4,5 CR	Scheibehenne
T-WIWI-107720	Market Research	4,5 CR	Klarmann
T-WIWI-111848	Online Concepts for Karlsruhe City Retailers	3 CR	Klarmann
T-WIWI-102883	Pricing	4,5 CR	Klarmann

**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.

**Prerequisites**

None

**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

**Content**

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

**Workload**

The total workload for this module is approximately 270 hours.

## M

## 6.50 Module: Mathematical Programming [M-WIWI-101473]

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

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each term	<b>Duration</b> 1 term	<b>Language</b> German/English	<b>Level</b> 4	<b>Version</b> 8
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<b>Compulsory Elective Courses (Election: at most 2 items)</b>			
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-111587	Multicriteria Optimization	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
<b>Supplementary Courses (Election: at most 2 items)</b>			
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-111247	Mathematics for High Dimensional Statistics	4,5 CR	Grothe
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-112109	Topics in Stochastic Optimization	4,5 CR	Rebennack

**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.

**Prerequisites**

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

**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.

**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](http://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.

## M

**6.51 Module: Microeconomic Theory [M-WIWI-101500]**

**Responsible:** Prof. Dr. Clemens Puppe  
**Organisation:** KIT Department of Economics and Management  
**Part of:** Electives (Economics)

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

Compulsory Elective Courses (Election: at least 9 credits)			
T-WIWI-102609	<a href="#">Advanced Topics in Economic Theory</a>	4,5 CR	Mitusch
T-WIWI-102861	<a href="#">Advanced Game Theory</a>	4,5 CR	Ehrhart, Puppe, Reiß
T-WIWI-102613	<a href="#">Auction Theory</a>	4,5 CR	Ehrhart
T-WIWI-105781	<a href="#">Incentives in Organizations</a>	4,5 CR	Nieken
T-WIWI-113264	<a href="#">Matching Theory</a>	4,5 CR	Puppe
T-WIWI-102859	<a href="#">Social Choice Theory</a>	4,5 CR	Puppe

**Competence Certificate**

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

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

**Prerequisites**

None

**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.

Here is an example of a positive question: what firm decisions does a specific regulatory policy result in under imperfect competition? An example of a normative question would be: which voting rule has appealing properties?

**Content**

The module teaches advanced concepts and content in microeconomic theory. Thematically, it offers a formally rigorous treatment of game theory and exemplary applications, such as strategic interaction on markets and non-/cooperative bargaining ("Advanced Game Theory"), as well as specialized courses dedicated to auctions ("Auktionstheorie") and incentive systems in organizations ("Incentives in Organizations"). Moreover, it offers the opportunity to delve deeper into the mathematical theory of voting and collective decision making, i.e. the systematic aggregation of preferences and judgments ("Social Choice Theory").

**Workload**

Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.

## M

**6.52 Module: Modeling the Dynamics of Financial Markets [M-WIWI-106660]**

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

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each summer term	<b>Duration</b> 1 term	<b>Language</b> English	<b>Level</b> 4	<b>Version</b> 1
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Mandatory			
T-WIWI-113414	<a href="#">Modeling the Dynamics of Financial Markets</a>	9 CR	Ulrich

**Competence Certificate**

The module examination takes the form of a one-hour written comprehensive examination on the courses "Dynamic Capital Market Theory", "Essentials for Dynamic Financial Machine Learning" and "Exercises, Python, Research Frontier in Dynamic Capital Markets".

**Competence Goal****Dynamic Capital Market Theory:**

Professional competence:

- Understanding of the principles of Dynamic Asset Pricing Theory
- Mastery of concepts such as stochastic calculus and dynamic modeling in discrete and continuous time
- Application of dynamic programming theory to portfolio and investment decisions
- Knowledge of pricing bonds, stocks, futures and options markets.

Interdisciplinary skills:

- Develop analytical skills for working on and solving complex problems in finance
- Ability to apply theoretical models to real financial market scenarios.

**Essentials for Dynamic Financial Machine Learning:**

Professional Competence:

- Competencies in Multivariate Time Series Modeling and Dynamic Volatility Modeling.
- Skills in dealing with big financial data.
- Knowledge in the estimation of risk premia and the application of Kalman Filtering.

Interdisciplinary skills:

- Analytical skills in applying machine learning algorithms to dynamic financial market data.
- Development of problem-solving skills through the practical application of Python in financial data analysis.

## Content

### Dynamic Capital Market Theory:

The course "Dynamic Capital Market Theory" offers an introduction to the modeling of dynamic capital markets. Portfolio holdings and asset prices move dynamically across time and states. This course teaches basic financial economic thinking to help understand why this is the case and how to optimally act in such environments.

Next to the asset pricing focus, the second focus of the course is on optimal portfolio choice (robo advisory). For that, this course develops the theory of dynamic programming in discrete and continuous time and applies it to solve portfolio choice and corporate investment decisions. These concepts are key for financial engineering and the machine learning branch of Reinforcement Learning.

Students obtain proficiency in the following topics:

- Dynamic Valuation and Optimal Dynamic Asset Allocation
- Dynamic modeling in discrete time and continuous time
- Stochastic Calculus
- Markov Decision Processes and Dynamic Programming in discrete time and continuous time
- Pricing of bonds, equity, futures and options

Lectures (2 SWS) develop all concepts on the whiteboard.

### Essentials for Dynamic Financial Machine Learning:

The course "Essentials for Dynamic Financial Machine Learning" teaches students to work with financial data, algorithms and statistical concepts.

Students are exposed to algorithms to learn key quantities of dynamic capital markets, such as time-varying risk premia, time-varying volatility and unobserved realizations of random states. The course covers the following concepts:

- Multivariate time series modeling
- Dynamic volatility modeling
- Handling big financial data
- Estimating risk premia
- Kalman Filtering

Weekly lectures (2 SWS) develop all algorithmic material on the whiteboard.

### Exercises, Python, Research Frontier in Dynamic Capital Markets:

This course provides hands-on experience in implementing concepts from dynamic capital market theory and financial machine learning using Python. Students will develop practical skills in coding and data analysis that complement the theoretical knowledge gained in the companion courses. The course covers:

- Introduction to Python for financial applications Data manipulation and visualization with pandas and matplotlib.
- Implementing dynamic portfolio optimization algorithms.
- Coding stochastic processes and simulations.
- Building and testing time series models.
- Applying machine learning techniques to financial data.
- Developing Reinforcement Learning algorithms for trading strategies.
- Implementing and backtesting option pricing models.
- Creating interactive financial dashboards

Weekly computer lab sessions (2 SWS) will guide students through coding exercises and problem sets that directly relate to topics covered in "Dynamic Capital Market Theory" and "Essentials for Dynamic Financial Machine Learning". Students will work on individual and group projects, applying their programming skills to real-world financial problems and current research questions in dynamic capital markets.

This course forms an integral part of the module, complementing the theoretical components with practical implementation skills essential for modern quantitative finance.

## Workload

Total workload for 9 credit points: approx. 270 hours. The exact distribution is based on the credit points of the courses in the module:

- Dynamic Capital Market Theory: 3 CP
- Essentials for Dynamic Financial Machine Learning: 3 CP
- Exercises, Python, Research Frontier in Dynamic Capital Markets: 3 CP

The total number of hours per course is determined by the amount of time spent attending the lectures and tutorials, 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.

## Recommendation

Recommendation: Knowledge in the fields of Advanced Statistics, Deep Learning, Financial Economics, Differential Equations, Optimization.

**Learning type**

The module consists of two weekly lectures and respective tutorials:

1. **Dynamic Capital Market Theory** and
2. **Essentials for Dynamic Financial Machine Learning.**
3. **Exercises, Python, Research Frontier in Dynamic Capital Markets**

## M

**6.53 Module: Module Master's Thesis [M-WIWI-106420]**

**Responsible:** Studiendekan des KIT-Studienganges  
**Organisation:** KIT Department of Economics and Management  
**Part of:** Master's Thesis

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

Mandatory			
T-WIWI-113003	Master's Thesis	30 CR	Studiendekan des KIT-Studienganges

**Competence Certificate**

The Master Thesis is a written exam which shows that the student can autonomously investigate a scientific problem in Industrial Engineering and Management. The Master Thesis is described in detail in the examination regulation.

The review is carried out by at least one examiner of the Department of Economics and Management, or, after approval, by at least one examiner of another department. The examiner has to be involved in the degree program. Involved in the degree program are the persons that coordinate a module or a lecture of the degree program.

The regular processing time takes six months. On a reasoned request of the student, the examination board can extend the processing time of a maximum of three months. If the Master Thesis is not completed in time, this exam is "failed", unless the student is not being responsible (e.g. maternity leave).

In addition to the written work on the topic, a presentation can be agreed as an obligatory and grade-relevant part of the final thesis. Depending on the agreement, this can take place before submission or after submission on an agreed date. The preparation time for the presentation does not count towards the processing time for the written part, unless it has been included in the total workload for the final project.

With consent of the examiner, the thesis can be written in English as well. Other languages require besides the consent of the examiner the approval of the examination board. The issue of the Master Thesis may only return once and only within the first month of processing time. A new topic has to be released within four weeks.

The module grade is the grade for the Master Thesis.

**Prerequisites**

Prerequisite for admission to the Master thesis is that at least 60 credit points has to be completed.

A written confirmation of the examiner about supervising the Master Thesis is required.

Please pay regard to the institute specific rules for supervising a Master Thesis.

The Master Thesis has to contain the following declaration: *„Ich versichere wahrheitsgemäß, die Arbeit selbstständig angefertigt, alle benutzten Hilfsmittel vollständig und genau angegeben und alles kenntlich gemacht zu haben, was aus Arbeiten anderer unverändert oder mit Abänderungen entnommen wurde.“*

If this declaration is not given, the Master Thesis will not be accepted.

**Modeled Conditions**

The following conditions have to be fulfilled:

- You need to have earned at least 60 credits in the following fields:
  - Economics
  - Electives
  - Methods
  - Society

**Competence Goal**

The student can independently handle a complex and unfamiliar subject based on scientific criteria and on 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 them and clearly communicate the results in scientific form.

**Content**

The Master Thesis is a major scientific work. The topic of the Master Thesis will be chosen by the student themselves and adjusted with the examiner. The topic has to be related to Industrial Engineering and Management and has to refer to subject-specific or interdisciplinary problems.

**Workload**

For the preparation and presentation of the master thesis a total effort of approx. 900 hours is expected. In addition to writing the thesis, this includes all necessary activities such as literature research, familiarization with the topic, familiarization with required tools if necessary, conducting studies/experiments, supervisory meetings, etc.

## M

**6.54 Module: Network Economics [M-WIWI-101406]**

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

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

Compulsory Elective Courses (Election: 9 credits)			
T-WIWI-100005	<a href="#">Competition in Networks</a>	4,5 CR	Mitusch
T-WIWI-100007	<a href="#">Transport Economics</a>	4,5 CR	Mitusch, Szimba
T-WIWI-102609	<a href="#">Advanced Topics in Economic Theory</a>	4,5 CR	Mitusch
T-WIWI-102712	<a href="#">Regulation Theory and Practice</a>	4,5 CR	Mitusch
T-WIWI-113147	<a href="#">Telecommunications and Internet – Economics and Policy</a>	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.

**Prerequisites**

None

**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.

**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.

**Workload**

Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.

**Recommendation**

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



## M

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

**Responsible:** Prof. Dr. Stefan Nickel  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Electives \(Operations Research\)](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	9

**Election notes**

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.

Students who choose the module in the field "compulsory elective modules" may select any two courses of the module.

<b>Compulsory Elective Courses (Election: between 1 and 2 items)</b>			
T-WIWI-102723	<a href="#">Graph Theory and Advanced Location Models</a>	4,5 CR	Nickel
T-WIWI-106200	<a href="#">Modeling and OR-Software: Advanced Topics</a>	4,5 CR	Nickel
T-WIWI-102715	<a href="#">Operations Research in Supply Chain Management</a>	4,5 CR	Nickel
<b>Supplementary Courses (Election: at most 1 item)</b>			
T-MACH-112213	<a href="#">Applied material flow simulation</a>	4,5 CR	Baumann
T-WIWI-106546	<a href="#">Introduction to Stochastic Optimization</a>	4,5 CR	Rebennack
T-WIWI-102718	<a href="#">Discrete-Event Simulation in Production and Logistics</a>	4,5 CR	Spieckermann
T-WIWI-102719	<a href="#">Mixed Integer Programming I</a>	4,5 CR	Stein
T-WIWI-102720	<a href="#">Mixed Integer Programming II</a>	4,5 CR	Stein
T-WIWI-106549	<a href="#">Large-scale Optimization</a>	4,5 CR	Rebennack
T-WIWI-111587	<a href="#">Multicriteria Optimization</a>	4,5 CR	Stein
T-WIWI-112109	<a href="#">Topics in Stochastic Optimization</a>	4,5 CR	Rebennack

**Competence Certificate**

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

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

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

**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.

**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.

**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.

**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

**Recommendation**

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

## M

**6.56 Module: Private Business Law [M-INFO-101216]**

**Responsible:** N.N.  
**Organisation:** KIT Department of Informatics  
**Part of:** Electives (Law and Sociology)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	6

Private Business Law (Election: at least 1 item as well as at least 9 credits)			
T-INFO-111405	<a href="#">Seminar: Commercial and Corporate Law in the IT Industry</a>	3 CR	Nolte
T-INFO-101288	<a href="#">Corporate Compliance</a>	3 CR	Herzig
T-INFO-102036	<a href="#">Computer Contract Law</a>	3 CR	Menk
T-INFO-111436	<a href="#">Employment Law</a>	3 CR	Hoff
T-INFO-111437	<a href="#">Tax Law</a>	3 CR	Dietrich

**Competence Certificate**

see partial achievements

**Prerequisites**

None

**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.

**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.

**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 3 credits is about 90 hours. The total number of hours per course results from the effort required to attend the lectures as well as the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.

## M

**6.57 Module: Public Economic and Technology Law [M-INFO-106754]**

**Responsible:** TT-Prof. Dr. Frederike Zufall  
**Organisation:** KIT Department of Informatics  
**Part of:** Electives (Law and Sociology)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	1

Public Economic and Technology Law (Election: at least 1 item as well as at least 9 credits)			
T-INFO-101309	<a href="#">Telecommunications Law</a>	3 CR	
T-INFO-101312	<a href="#">European and International Law</a>	3 CR	Brühann
T-INFO-111404	<a href="#">Seminar: IT- Security Law</a>	3 CR	Schallbruch
T-INFO-113381	<a href="#">Public International Law</a>	3 CR	

**Competence Certificate**

see partial achievement

**Prerequisites**

see partial achievement

**Competence Goal**

Students

- have in-depth knowledge and understanding of selected areas of public economic and technology law
- understand international and European legal frameworks,
- can establish connections between technical and legal issues, and assess and evaluate them from a legal perspective.

**Content**

The module covers a range of topics in public economic and technology law. In addition to telecommunications law and IT security law, it includes an in-depth examination of the European and international legal framework. Current regulatory topics relating to the platform economy, the EU digital single market and on regulating artificial intelligence are equally addressed.

**Workload**

The total workload for this module is approx. 270 hours (9 credits). The distribution is based on the credit points of the courses in the module. The workload for courses with 3 credits is approx. 90 hours. The total number of work hours per course results from the time required to attend the lectures, the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.

**Recommendation**

see partial achievement

## M

## 6.58 Module: Seminar Module [M-WIWI-106425]

**Responsible:** Studiendekan des KIT-Studienganges  
**Organisation:** KIT Department of Economics and Management  
**Part of:** Electives (mandatory)

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

Compulsory Seminars (Election: 2 items)			
T-WIWI-103474	Seminar in Business Administration A (Master)	3 CR	Professorenschaft des Fachbereichs Betriebswirtschaftslehre
T-WIWI-103476	Seminar in Business Administration B (Master)	3 CR	Professorenschaft des Fachbereichs Betriebswirtschaftslehre
T-WIWI-103477	Seminar in Economics B (Master)	3 CR	Professorenschaft des Fachbereichs Volkswirtschaftslehre
T-WIWI-103478	Seminar in Economics A (Master)	3 CR	Professorenschaft des Fachbereichs Volkswirtschaftslehre
T-WIWI-103479	Seminar in Informatics A (Master)	3 CR	Professorenschaft des Instituts AIFB
T-WIWI-103480	Seminar in Informatics B (Master)	3 CR	Professorenschaft des Instituts AIFB
T-WIWI-103481	Seminar in Operations Research A (Master)	3 CR	Nickel, Rebennack, Stein
T-WIWI-103482	Seminar in Operations Research B (Master)	3 CR	Nickel, Rebennack, Stein
T-WIWI-103483	Seminar in Statistics A (Master)	3 CR	Grothe, Schienle
T-WIWI-103484	Seminar in Statistics B (Master)	3 CR	Grothe, Schienle
T-INFO-101997	Seminar: Legal Studies I	3 CR	N.N.
T-INFO-105945	Seminar: Legal Studies II	3 CR	N.N.
T-MACH-102135	Conveying Technology and Logistics	3 CR	Furmans, Pagani
T-MACH-109062	Seminar Production Technology	3 CR	Fleischer, Lanza, Schulze
T-MACH-108737	Seminar Data-Mining in Production	3 CR	Lanza
T-ETIT-100754	Seminar Creating a Patent Specification	3 CR	Stork
T-WIWI-108763	Seminar in Engineering Science Master (approval)	3 CR	Fachvertreter ingenieurwissenschaftlicher Fakultäten
Interdisciplinary Qualifications (Election: at least 3 credits)			
T-WIWI-112967	Tutoring: Training and Practice <i>This item will not influence the grade calculation of this parent.</i>	2 CR	
T-WIWI-111438	Self-Booking-HOC-SPZ-ZAK-STK-Graded <i>This item will not influence the grade calculation of this parent.</i>	1 CR	
T-WIWI-111439	Self-Booking-HOC-SPZ-ZAK-STK-Graded <i>This item will not influence the grade calculation of this parent.</i>	2 CR	
T-WIWI-111440	Self-Booking-HOC-SPZ-ZAK-STK-Graded <i>This item will not influence the grade calculation of this parent.</i>	3 CR	
T-WIWI-111441	Self-Booking-HOC-SPZ-ZAK-STK-Ungraded <i>This item will not influence the grade calculation of this parent.</i>	1 CR	
T-WIWI-111442	Self-Booking-HOC-SPZ-ZAK-STK-Ungraded <i>This item will not influence the grade calculation of this parent.</i>	2 CR	
T-WIWI-111443	Self-Booking-HOC-SPZ-ZAK-STK-Ungraded <i>This item will not influence the grade calculation of this parent.</i>	3 CR	

**Competence Certificate**

The module examination consists of three seminars. A detailed description of every singled assessment is given in the specific course characterization.

The final mark for the module is the average of the marks for each of the three seminars, weighted by the credits and truncated after the first decimal.

**Prerequisites**

The course specific preconditions must be observed. Three seminars out of the course list, that have at least 3 CP each and are offered by a representative of the Department of Economics and Management or of the Center for applied legal studies (Department of Informatics), have to be chosen.

**Competence Goal**

- The students are in a position to independently handle current, research-based tasks according to scientific criteria.
- They are able to research, analyze, abstract and critically review the information.
- They can draw own conclusions using their interdisciplinary knowledge from the less structured information and selectively develop current research results.
- They can logically and systematically present the obtained 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.
- Students are familiar with the DFG's Code of Conduct "Guidelines for Safeguarding Good Research Practice" and base their scientific work on it.

**Content**

Competences which are gained in the seminar module especially prepare the student for composing the final thesis. Within the term paper and the presentation, the student exercises himself in scientific working techniques supported by the supervisor. Beside advancing skills in techniques of scientific working, there are gained integrative key qualifications as well.

**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 catalog 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>.

**Workload**

The total workload for this module is approximately 270 hours.

## M

**6.59 Module: Service Analytics [M-WIWI-101506]**

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

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

**Part of:** [Electives \(Business Administration\)](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	English	4	10

Compulsory Elective Courses (Election: 9 credits)			
T-WIWI-108715	<a href="#">Artificial Intelligence in Service Systems</a>	4,5 CR	Satzger
T-WIWI-111219	<a href="#">Artificial Intelligence in Service Systems - Applications in Computer Vision</a>	4,5 CR	Satzger
T-WIWI-105777	<a href="#">Business Intelligence Systems</a>	4,5 CR	Mädche
T-WIWI-112152	<a href="#">Practical Seminar: Artificial Intelligence in Service Systems</a>	4,5 CR	Satzger
T-WIWI-113725	<a href="#">Special Topics in Information Systems</a>	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.

**Prerequisites**

None

**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

**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.

**Annotation**

This module is part of the KSRI teaching profile “Digital Service Systems”. Further information on a service-specific profiling is available under [www.ksri.kit.edu/teaching](http://www.ksri.kit.edu/teaching).

**Workload**

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

Attendance time: 90 hours

Preparation and follow-up: 100 hours

Exam and exam preparation: 80 hours

**Recommendation**

The course Service Analytics A [2595501] should be taken.

## M

**6.60 Module: Service Design Thinking [M-WIWI-101503]**

**Responsible:** Prof. Dr. Gerhard Satzger  
Prof. Dr. Orestis Terzidis

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

**Part of:** [Electives \(Business Administration\)](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each winter term	2 terms	English	4	1

Mandatory			
T-WIWI-102849	<a href="#">Service Design Thinking</a>	9 CR	Satzger, Terzidis

**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).

**Prerequisites**

None

**Competence Goal**

Students

- Gain a comprehensive understanding of the globally recognized innovation approach “Design Thinking” as introduced and promoted by the Stanford University
- Apply the learned approach in the context of a real innovation project provided by a partner organization
- Conceive new, creative solutions through extensive need finding of relevant service users  
Develop prototypes early and independently, test them and improve them iteratively to solve the challenge provided by the partner organization
- Communicate, present and network in interdisciplinary and international environments.

**Content**

Course phases (roughly 4 weeks each):

Design Space Exploration:

- Exploring the problem space by questioning the given innovation challenge from practice.
- Familiarization with the topic area of the respective challenge.
- Gathering first impressions of the requirements and needs of people related to the problem.

Critical Function Prototype:

- Building an intensive understanding of the needs of the target group of the respective challenge.
- Deriving critical functions from the customer's perspective that could help solve the overall problem.
- Building prototypes for the critical functions and testing them in real customer situations.

Dark Horse Prototype:

- Reversal of assumptions and experiences made so far. The goal is to develop radically new and unconventional ideas.
- Implementation of the ideas into simple prototypes and subsequent testing.

Funky Prototype:

- Integration of the individual successfully tested functions from the critical function and dark horse phase into solution concepts. These are also tested and further developed.

Functional Prototype:

- Selection of successful funky prototypes and development of these towards high-resolution prototypes. The final solution approach for the project is written down in detail and feedback is obtained.

Final Prototype:

- Implementing the final prototype and presenting it to the practical partner as well as the SUGAR Network.



**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 (<https://sdtkarlsruhe.de/>). Furthermore, the lecturers provide an information event for applicants every year in May. This module is part of the KSRI Teaching Program.

**Workload**

The workload for this module is approx. 2 days per week over a period of 9 months. The workload for this practical module is therefore comparatively high. The reason for this is that the participants work in international teams with students from other universities and partner organizations and solve real innovation challenges.

The workload of approx. 270 hours is spread over approx. 105 hours (3.5 CP) in the first semester and 165 hours (5.5 CP) in the second semester.

**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.

## M

**6.61 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:** Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	English	4	6

Compulsory Elective Courses (Election: 9 credits)			
T-WIWI-112757	Digital Services: Innovation & Business Models	4,5 CR	Satzger
T-WIWI-112823	Platform & Market Engineering: Commerce, Media, and Digital Democracy	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.

**Prerequisites**

None

**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 a 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.

**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.

**Annotation**

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

From summer semester 2023, the course Service Innovation will be offered with a revised course concept and content. The focus will be on the closer integration of the topics of service innovation and digitalization. Current foundational content (e.g., on service innovation challenges or human-centered innovation methods) will remain. New content will cover topics such as digital platforms and ecosystems, IoT and smart service innovation, and business models.

**Workload**

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

**Recommendation**

None

## M

**6.62 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:** Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	English	4	6

Compulsory Elective Courses (Election: 9 credits)			
T-WIWI-112757	<a href="#">Digital Services: Innovation &amp; Business Models</a>	4,5 CR	Satzger
T-WIWI-113460	<a href="#">Engineering Interactive Systems: AI &amp; Wearables</a>	4,5 CR	Mädche
T-WIWI-113459	<a href="#">Practical Seminar: Human-Centered Systems</a>	4,5 CR	Mädche
T-WIWI-110887	<a href="#">Practical Seminar: Service Innovation</a>	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.

**Prerequisites****Dependencies between courses:**

The course Practical Seminar Service Innovation cannot be applied in combination with the course Practical Seminar Digital Service Design.

**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.

**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.

**Annotation**

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

From summer semester 2023, the course Service Innovation will be offered with a revised course concept and content. The focus will be on the closer integration of the topics of service innovation and digitalization. Current foundational content (e.g., on service innovation challenges or human-centered innovation methods) will remain. New content will cover topics such as digital platforms and ecosystems, IoT and smart service innovation, and business models.

**Workload**

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

**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].

## M

**6.63 Module: Service Management [M-WIWI-101448]**

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

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

**Part of:** Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	English	4	11

Compulsory Elective Courses (Election: 9 credits)			
T-WIWI-108715	<a href="#">Artificial Intelligence in Service Systems</a>	4,5 CR	Satzger
T-WIWI-111219	<a href="#">Artificial Intelligence in Service Systems - Applications in Computer Vision</a>	4,5 CR	Satzger
T-WIWI-112757	<a href="#">Digital Services: Innovation &amp; Business Models</a>	4,5 CR	Satzger

**Competence Certificate**

The assessment is carried out as partial exams, 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.

**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.

**Annotation**

From summer semester 2023, the course Service Innovation will be offered with a revised course concept and content. The focus will be on the closer integration of the topics of service innovation and digitalization. Current foundational content (e.g., on service innovation challenges or human-centered innovation methods) will remain. New content will cover topics such as digital platforms and ecosystems, IoT and smart service innovation, and business models.

**Workload**

Total workload for 9 credit points: approx. 270 hours. The allocation is based on the credit points of the courses in the module. 120-135 hours for the courses with 4.5 credits, 135-150 hours for the courses with 5 credits and 150-180 hours for the courses with 6 credits.

The total number of hours per course results from the time required to attend the lectures and exercises, as well as the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.

**Recommendation**

None

## M

**6.64 Module: Service Operations [M-WIWI-102805]**

**Responsible:** Prof. Dr. Stefan Nickel  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Electives \(Operations Research\)](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	7

**Election notes**

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.

Students who choose the module in the field "compulsory elective modules" may select any two courses of the module.

<b>Compulsory Elective Courses (Election: at most 2 items)</b>			
T-WIWI-102718	<a href="#">Discrete-Event Simulation in Production and Logistics</a>	4,5 CR	Spieckermann
T-WIWI-102884	<a href="#">Operations Research in Health Care Management</a>	4,5 CR	Nickel
T-WIWI-102715	<a href="#">Operations Research in Supply Chain Management</a>	4,5 CR	Nickel
T-WIWI-102716	<a href="#">Practical Seminar: Health Care Management (with Case Studies)</a>	4,5 CR	Nickel
<b>Supplementary Courses (Election: at most 1 item)</b>			
T-MACH-112213	<a href="#">Applied material flow simulation</a>	4,5 CR	Baumann
T-WIWI-102872	<a href="#">Challenges in Supply Chain Management</a>	4,5 CR	Mohr
T-WIWI-110971	<a href="#">Demand-Driven Supply Chain Planning</a>	4,5 CR	Heckmann

**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.

**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.

**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

**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.

**Annotation**

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

**Workload**

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

**Recommendation**

The course Practical Seminar Health Care should be combined with the course OR in Health Care Management.

## M

**6.65 Module: Sociology [M-GEISTSOZ-101169]**

**Responsible:** Prof. Dr. Gerd Nollmann  
**Organisation:** KIT Department of Humanities and Social Sciences  
**Part of:** [Electives \(Law and Sociology\)](#)

Credits	Grading scale	Recurrence	Duration	Level	Version
9	Grade to a tenth	Each term	2 terms	4	2

Mandatory			
T-GEISTSOZ-104565	<a href="#">Computer Aided Data Analysis</a>	0 CR	Nollmann
T-GEISTSOZ-109052	<a href="#">Application of Social Science Methods (WiWi)</a>	9 CR	Nollmann

**Prerequisites**

Students must pass three exercise sheets within the seminar "Computer based data analysis".

**Competence Goal**

The student

- Gains theoretical and methodical knowledge of social processes and structures,
- learns a script based data analysis tool (R, Stata, Python),
- gathers his/her data within an own framework and/or analyzes complex data,
- is able to present his/her work results in a precise and clear way.

**Content**

The Sociology module offers students the opportunity to learn a data analysis tool (R, Stata, Python) within the framework of a two-semester course and to independently transfer this tool to a content-related question. Both the tool and the contents are determined by the lecturers. The contents can refer to the analysis of large population surveys (SOEP, Microcensus, ALLBUS), to own experiments, to own field studies or to Big Data analyses.

**Annotation**

Basic knowledge in multivariate regression and inference statistics is required.



## M

## 6.66 Module: Statistics &amp; Econometrics [M-WIWI-106411]

**Responsible:** Prof. Dr. Fabian Krüger  
**Organisation:** KIT Department of Economics and Management  
**Part of:** Methods

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	1

Mandatory			
T-WIWI-111388	<a href="#">Applied Econometrics</a>	4,5 CR	Schienle
Compulsory Elective Courses (Election: 1 item)			
T-WIWI-103064	<a href="#">Financial Econometrics</a>	4,5 CR	Schienle
T-WIWI-110939	<a href="#">Financial Econometrics II</a>	4,5 CR	Schienle
T-WIWI-111247	<a href="#">Mathematics for High Dimensional Statistics</a>	4,5 CR	Grothe
T-WIWI-103124	<a href="#">Multivariate Statistical Methods</a>	4,5 CR	Grothe
T-WIWI-103126	<a href="#">Non- and Semiparametrics</a>	4,5 CR	Schienle
T-WIWI-103127	<a href="#">Panel Data</a>	4,5 CR	Heller
T-WIWI-110868	<a href="#">Predictive Modeling</a>	4,5 CR	Krüger
T-WIWI-111387	<a href="#">Probabilistic Time Series Forecasting Challenge</a>	4,5 CR	Krüger
T-WIWI-103065	<a href="#">Statistical Modeling of Generalized Regression Models</a>	4,5 CR	Heller

**Competence Certificate**

The module examination takes the form of partial examinations on the core course and other courses of the module totaling at least 9 ECTS. The course assessment is described for each course of this module. The overall grade of the module is formed from the ECTS weighted grades of the partial examinations and truncated after the first decimal place.

**Competence Goal**

The student

- knows advanced econometric and statistical methods for various types of data and research questions
- is able to apply these methods, to implement them via statistical software and to interpret the results competently

**Content**

The module offers a comprehensive portfolio of econometric and statistical methods for various types of data (e.g. cross section or time series, univariate or multivariate) and research questions (e.g. forecasting, parameter estimation and hypothesis testing, dimensionality reduction).

**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

**6.67 Module: Stochastic Optimization [M-WIWI-103289]**

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

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each term	<b>Duration</b> 1 term	<b>Language</b> German/English	<b>Level</b> 4	<b>Version</b> 11
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<b>Compulsory Elective Courses (Election: between 1 and 2 items)</b>			
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
<b>Supplementary Courses (Election: at most 1 item)</b>			
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-111247	Mathematics for High Dimensional Statistics	4,5 CR	Grothe
T-WIWI-111587	Multicriteria Optimization	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-112109	Topics in Stochastic 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.

**Prerequisites**

At least one of the courses "Advanced Stochastic Optimization", "Large-scale Optimization" or "Introduction to Stochastic Optimization" has to be taken.

**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.

**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.

**Annotation**

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.

**Recommendation**

It is recommended to listen to the lecture "Introduction to Stochastic Optimization" before the lecture "Advanced Stochastic Optimization" is visited.

## M

**6.68 Module: Transport Infrastructure Policy and Regional Development [M-WIWI-101485]**

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	2

Compulsory Elective Courses (Election: 2 items)			
T-WIWI-103107	<a href="#">Spatial Economics</a>	4,5 CR	Ott
T-WIWI-100007	<a href="#">Transport Economics</a>	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.

**Prerequisites**

None

**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

**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. The exact distribution is based on the credit points of the courses in the module. The total number of hours per course is determined by the amount of time spent attending the lectures and tutorials, 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.


## 7 Courses



T

### 7.1 Course: Advanced Corporate Finance [T-WIWI-113469]

**Responsible:** Prof. Dr. Martin Ruckes  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101453 - Applied Strategic Decisions](#)  
[M-WIWI-101502 - Economic Theory and its Application in Finance](#)

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

Events					
ST 2024	2530214	<a href="#">Advanced Corporate Finance</a>	2 SWS	Lecture / 	Ruckes
Exams					
ST 2024	7900073	<a href="#">Advanced Corporate Finance</a>			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.

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

V

### Advanced Corporate Finance

2530214, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
On-Site

#### Content

The course covers the foundational principles of advanced topics of corporate finance, such as corporate governance, executive compensation, strategy & finance, mergers & acquisitions (M&A), and sustainable finance. Additionally, the course explores the respective institutional aspects within these areas of corporate finance. The approach is holistic, including both theoretical-conceptual aspects (e.g., moral hazard and the influence of asymmetric information) and empirical insights (e.g., the effects of financial decisions on firm value). Throughout, the course will emphasize both fundamental and current research findings.

#### Learning outcomes:

Upon successful completion of the course, students will possess profound knowledge and skills in advanced areas of corporate finance. These areas include topics such as corporate governance, executive compensation, strategy and finance, mergers and acquisitions (M&A), as well as key aspects of sustainable finance. Participants of this course will be able to describe and analyze the theoretical and conceptual foundations of the effects of information asymmetries and moral hazard on corporate financing behavior and assess their impact in corporate practice. Furthermore, upon completion of the course, participants will be familiar with the fundamental institutional elements in these areas and be able to discuss and solve advanced problems in corporate finance from both a theoretical and an empirical perspective. Moreover, students will acquire an advanced understanding of the central scientific findings in these topic areas, which will enable them to critically apply them in scientific and practical contexts.

#### Literature

Verschiedene Literaturquellen, u.a. Brealey/Myers/Allen/Edmans: Principles of Corporate Finance; Thomson/Conyon: Corporate Governance: Mechanisms and Systems; Larcker/Tayan: Corporate Governance Matters. Weitere Literatur wird in der Lehrveranstaltung bekannt gegeben.

Various source of literature, among others Brealey/Myers/Allen/Edmans: Principles of Corporate Finance; Thomson/Conyon: Corporate Governance: Mechanisms and Systems; Larcker/Tayan: Corporate Governance Matters. Additional reading materials will be introduced during the course.

## T

## 7.2 Course: Advanced Digital Economics [T-WIWI-112990]

**Responsible:** Dr. Frank Rosar  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-106408 - Digital Economics](#)

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

Events					
WT 24/25	2500033	<a href="#">Advanced Digital Economics</a>	2 SWS	Lecture / 🗎	Rosar
WT 24/25	2500039	<a href="#">Advanced in Digital Economics</a>	1 SWS	Practice / 🗎	Rosar
Exams					
ST 2024	7900285	<a href="#">Advanced Digital Economics</a>			Puppe
WT 24/25	7900185	<a href="#">Advanced Digital Economics</a>			Puppe

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

### Competence Certificate

The assessment consists of a written exam (60min) during the lecture-free period of the semester. The examination is offered every semester and can be repeated at any regular examination date.

A bonus can be earned for successful participation in the exercises by calculating or submitting correct solutions. 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

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

## V

### Advanced Digital Economics

2500033, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
On-Site

### Content

The course "Advanced Digital Economics" is designed for students pursuing a master's degree in Digital Economics. This course explores economic principles underlying the digital economy with a focus on the crucial roles of incentives and design. Students will explore theoretical frameworks to understand how digital platforms, networks, and market mechanisms operate and evolve.

### Topics (tentatively):

By the end of this course, students will be able to:

- Analyze and apply the concept of correlated equilibrium in digital contexts.
- Evaluate and design reputation systems to enhance trust in digital marketplaces.
- Understand the dynamics of games on networks and network-formation games and their implications for digital economics.
- Assess the effects of network externalities on platform-based markets.
- Investigate the functioning of and strategies in online advertising markets.
- Address mechanism and market design problems specific to the digital economy.
- Understand how prediction markets can aggregate information and inform decision-making.
- Examine the incentives and economic mechanisms underpinning cryptocurrencies.

## T

## 7.3 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](#)  
[M-WIWI-106408 - Digital Economics](#)

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

Events					
WT 24/25	2500037	<a href="#">Advanced Game Theory</a>	2 SWS	Lecture / 🗣️	Puppe, Ammann
WT 24/25	2500038	<a href="#">Übung zu Advanced Game Theory</a>	1 SWS	Practice / 🗣️	Puppe, Ammann
Exams					
ST 2024	7910001	<a href="#">Advanced Game Theory</a>			Reiß
WT 24/25	7900013	<a href="#">Advanced Game Theory</a>			Puppe

Legend: 🗣️ Online, 🗣️🗣️ Blended (On-Site/Online), 🗣️ On-Site, ✖ Canceled

**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**

2500037, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**Content**

The course "Advanced Game Theory" deals with the formulation and solution concepts of games. A game is defined as a formal representation of a situation in which a number of individuals interact in a setting of strategic interdependence.

The first part of the course builds upon the topics of the bachelor's course "Introduction to Game Theory". In particular, in contrast to the bachelor's lecture, the course introduces a rigorous mathematical treatment of simultaneous move and dynamic games (noncooperative games) as well as their solution concepts.

The second part of the course deals with the topics of evolutionary and cooperative game theory. Both the models as well as the solution concepts of evolutionary stable strategies, the core, and the Shapley value are introduced.

The third part of the course embeds the topic of game theory in the more general context of mechanism design and concludes with the introduction of voting games and their solution concepts.

**Learning objectives:**

The student should learn

- to name and define the models and solution concepts of a variety of games in both mathematical-formal and precise verbal form.
- to solve games of different types and difficulties with the appropriate solution concepts.
- to prove and reason about simple statements on games and their solution concepts.
- to model strategic interdependencies in the real world as games in a formal mathematical way.

**Workload:**

Total workload for 4.5 credit points: approx. 135 hours

Attendance: 30 hours

Self-study: 105 hours

**Literature**

- Mas-Colell, A., Whinston, M. D. and Green, J. R. 1995. *Microeconomic Theory*. Oxford University Press.
- Osborne, M. J. and Rubinstein, A. 1998. *A Course in Game Theory*. 5. print. MIT Press.
- Myerson, R. B. 1997. *Game Theory: Analysis of Conflict*. Harvard University Press.



## T

## 7.4 Course: Advanced Lab Blockchain Hackathon (Master) [T-WIWI-111126]

**Responsible:** Prof. Dr. Ali Sunyaev  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Exams			
ST 2024	7900172	<a href="#">Lab Blockchain Hackathon (Master)</a>	Sunyaev

**Competence Certificate**

The alternative exam assessment consists of:

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

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

**Prerequisites**

None

## T

## 7.5 Course: Advanced Lab Informatics (Master) [T-WIWI-110548]

**Responsible:** Professorenschaft des Instituts AIFB  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101628 - Emphasis in Informatics  
M-WIWI-101630 - Electives in Informatics

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

Events					
ST 2024	2512205	Lab Realisation of innovative services (Master)	3 SWS	Practical course / 🎧	Schiefer, Schüler, Toussaint
ST 2024	2512207	Lab Automation in Everyday Life (Master)	3 SWS	Practical course / 🎧	Oberweis, Forell, Frister, Rybinski, Schiefer
ST 2024	2512401	Advanced Lab Development of Sociotechnical Information Systems (Master)	3 SWS	Practical course / 🔄	Sunyaev, Leiser
ST 2024	2512403	Advanced Lab Blockchain Hackathon (Master)		Practical course / 📱	Sunyaev, Sturm, Kannengießler, Beyene
ST 2024	2512500	Project Lab Machine Learning	3 SWS	Practical course / 🔄	Daaboul, Zöllner, Schneider
ST 2024	2512555	Praktikum Security, Usability and Society (Master)	3 SWS	Practical course / 📱	Volkamer, Strufe, Mayer, Berens, Mossano, Hennig, Veit, Länge
WT 24/25	2512101	Seminar Digital Twins with Lego: Hands-on Workshop in Data-driven Simulation (Master)	2 SWS	Seminar / 🎧	Lazarova-Molnar, Götz, Khodadadi
WT 24/25	2512205	Lab Realisation of innovative services (Master)	3 SWS	Practical course / 🔄	Toussaint, Schiefer, Schüler
WT 24/25	2512314	Practical Course Linked Data and the Semantic Web (Master)	3 SWS	Practical course / 🎧	Käfer, Braun
WT 24/25	2512401	Practical Course Sociotechnical Information Systems Development (Master)	3 SWS	Practical course / 📱	Sunyaev, Leiser
WT 24/25	2512501	Practical Course Cognitive automobiles and robots (Master)	3 SWS	Practical course / 🔄	Zöllner, Daaboul
WT 24/25	2512600	Project lab Information Service Engineering (Master)	3 SWS	Practical course / 🎧	Sack
Exams					
ST 2024	7900020	Lab Automation in Everyday Life (Master)			Oberweis
ST 2024	7900086	Project Lab Machine Learning			Zöllner
ST 2024	7900148	Advanced Lab Realization of innovative services (Master)			Oberweis
ST 2024	7900172	Lab Blockchain Hackathon (Master)			Sunyaev
ST 2024	7900173	Advanced Lab Development of Sociotechnical Information Systems (Master)			Sunyaev
ST 2024	7900178	Practical Lab Security, Usability and Society (Master)			Volkamer
WT 24/25	7900035	Practical Course Digital Twins with Lego: Hands-on Workshop in Data-driven Simulation (Master)			Lazarova-Molnar
WT 24/25	7900046	Advanced Lab Security (Master)			Volkamer
WT 24/25	7900102	Advanced Lab Information Service Engineering (Master)			Sack
WT 24/25	7900107	Advanced Lab Cognitive Automobile and Robots (Master)			Zöllner
WT 24/25	7900143	Advanced Lab Development of Sociotechnical Information Systems (Master)			Sunyaev
WT 24/25	7900218	Advanced Lab Linked Data and the Semantic Web (Master)			Käfer

WT 24/25	7900306	<a href="#">Advanced Lab Realization of Innovative Services (Master)</a>	Oberweis
WT 24/25	7900307	<a href="#">Advanced Lab Security, Usability and Society (Master)</a>	Volkamer

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

### Competence Certificate

The alternative exam assessment consists of:

- a practical work
- a presentation and
- 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:

V

**Lab Realisation of innovative services (Master)**  
2512205, SS 2024, 3 SWS, Language: German, [Open in study portal](#)

Practical course (P)  
On-Site

### Content

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

### Organizational issues

Informationen zu Themen und die Anmeldung erfolgt vor Praktikumsbeginn im Wiwi-Portal <https://portal.wiwi.kit.edu/ys>

V

**Lab Automation in Everyday Life (Master)**  
2512207, SS 2024, 3 SWS, Language: German, [Open in study portal](#)

Practical course (P)  
On-Site

### 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.

In case of questions, please contact [fabian.rybinski@kit.edu](mailto:fabian.rybinski@kit.edu).

### Organizational issues

Informationen zu Themen und die Anmeldung erfolgt vor Praktikumsbeginn im Wiwi-Portal <https://portal.wiwi.kit.edu/ys>

Bei Fragen bitte an [fabian.rybinski@kit.edu](mailto:fabian.rybinski@kit.edu) wenden.

V

**Advanced Lab Development of Sociotechnical Information Systems (Master)**  
2512401, SS 2024, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)  
Blended (On-Site/Online)

### 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

**Project Lab Machine Learning**  
2512500, SS 2024, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)  
Blended (On-Site/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 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.

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

2512555, SS 2024, 3 SWS, Language: German/English, [Open in study portal](#)

**Practical course (P)  
Online**

**Content**

The Praktikum Security, Usability and Society will cover topics both of usable security and privacy programming, and how to conduct user studies. To reserve a place, please, register on the WiWi portal and send an email with your chosen topic, plus a back-up one, to [mattia.mossano@kit.edu](mailto:mattia.mossano@kit.edu). Topics are assigned first-come-first-served until all of them are filled. Topics in italics have been already assigned.

Application deadline 12.04.2024  
Assignment 15.04.2024  
Confirmation deadline 19.04.2024

**Important dates:**

Kick-off: 17.04.2024, 09:00 AM CET in Big Blue Button - [Link](#)  
Report & code feedback deadline: 26.07.2024, 23:59 CET  
Feedback on Report & code: 16.08.2024, 23:59 CET  
Final report + code deadline: 01.09.2024, 23:59 CET  
Presentation draft deadline: 06.09.2024, 23:59 CET  
Feedback on presentation draft: 13.09.2024, 23:59 CET  
Final presentation deadline: 17.09.2024, 23:59 CET  
Presentation day: 18.09.2024, 09:00 CET

Topics:

**Privacy Friendly Apps**

In this area, 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.

Title: NoPhish App

Number of students: 2 Ba/Ma

Description: The NoPhish app was one of the first measures from the NoPhish concept. The app has been around for a long time and has not been updated since then. Accordingly, the task of the project is to make the app functional for the current Android version. The app is also to be optimised so that updates, e.g. new chapters, can be added easily.

**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.

Title: Hacking TORPEDO

Number of students: 1-2 Ba/Ma

Description: TORPEDO has existed for many years both as a Thunderbird add-on and as a web extension. TORPEDO is intended to help address various forms of phishing attacks and thereby protect the user, e.g. against various manipulations of the domain or additional tooltips. However, no targeted attacks on TORPEDO have yet been found. The aim of the work is to subject TORPEDO to a stress test and also to develop attacks that specifically target the implementation of TORPEDO.

Title: Making e-mails more visible by embedding moving images

Number of students: 1 Ma

Description: In case of a security incident, it is necessary to inform the affected persons about their vulnerabilities as soon as possible. Within the context of the INSPECTION project, we are currently informing website owners via e-mail about security related vulnerabilities on their websites. Although e-mails have been shown to be the most cost-efficient means to deliver such information, they have not lead to an appropriate remediation rate. While speaking to the affected website owners we learned that they would appreciate more information, although not being delivered as more text in the e-mail. Also, we learned that most e-mails were not read because they were considered spam. Thus, we need to find a way to make e-mail notifications more effective in raising peoples' awareness. Videos have been proven effective to raise awareness in the context of IT security. The goal of the project will be, to explore ways to embed videos in an e-mail via HTML (either as gifs or as preview to a YouTube video). The challenge is to make this e-mail readable for different clients and webmail as well as getting it delivered through spam filters.

**Designing Security User studies**

These topics are related to how to set up and conduct user studies of various types. Online studies, interviews and lab studies are possible. At the end of the semester, the students present a report / paper and a talk in which they present their methodologies and the results of small pre-studies.

Title: Usability of Password Managers in Virtual Reality

Number of students: 2 Ma

Description: The pre-dominant form of authentication in Virtual Reality (VR) are passwords. Passwords create a burden for users in the VR environment because of special input methods and the virtual keyboard [Stephenson, S. et al (2022). SoK: Authentication in Augmented and Virtual Reality]. Password Managers (PMs) can support the user with handling this problem [Mayer, P. et al. (2022). Why Users (Don't) Use Password Managers at a Large Educational Institution]. They offer auto-filling features, store credentials in an overview or generate complex and secure passwords. Especially in the VR context, where typing a password is slow and complex, PMs can be beneficial. We want to explore the different PMs in VR and test the usability to find challenges and possible solutions.

### Run Usable Security Studies and Results Analysis

These topics are related to run and analyse the results of user-studies. Online studies, interviews and lab studies are all possible, depending on the topic. At the end of the semester, the students present a report / paper with the analyses conducted and a talk in which they present the results.

Title: Visualization of Eye Gaze Patterns during Authentication Tasks

Number of students: 1 Ba/Ma

Description: In this project, students will analyze and visualize eye gaze data collected during two specific authentication tasks: the Dot Task and the Slider Task. The primary objective is to represent subjects' eye movements visually, enhancing the understanding of gaze patterns during the authentication process. \*Dot Task Visualization:\* For the Dot Task, participants were instructed to focus on a sequence of dots displayed on a screen. The dataset includes the positions of these dots and the corresponding gaze locations of the subjects. The student's task is to create a dynamic visualization that not only represents these positions accurately but also illustrates the sequence in which the dots were focused on by the subjects. \*Slider Task Visualization:\* The Slider Task involved presenting participants with a series of images, for which both the images' locations on the screen and the subjects' gaze locations are recorded. The challenge is to develop a heatmap visualization based on this data, effectively demonstrating the concentration and dispersion of gaze points across different images.

Title: How do website owners become aware that their website was hacked?

Number of student: 1 Ma

Description: We identified website owners that were affected by a hack on their website and sent them a notification. During the course of the notification process, we also identified several websites who seemingly remediated the hack before our notification. We now wanted to find out, how those website owners got aware of the hack. If they were notified by a third party, we would also like to know how and by whom they were notified and what their feelings were with respect to the notification. To answer these questions, a survey was designed and pre-tested with a sample of website owners. The study was run as an online survey using SosciSurvey. The aim of this lab topic will be to improve the survey based on the findings of the pre-study (<https://publikationen.bibliothek.kit.edu/1000160718>) and sent out invitations to the survey to around 100 website owners.

Title: Phishing through homographic attacks in messengers and social networks

Number of students: 1-2 Ba/Ma

Description: The task will be to test three types of attacks in messengers and social networks that work in some email clients. First is the link mismatch attack, where the link text differs from the actual link target. Second is an attack in which the actual link target is disguised by URL encoding [[https://en.wikipedia.org/wiki/URL\\_encoding](https://en.wikipedia.org/wiki/URL_encoding)], and finally homographic attacks which uses Internationalized Domain Names [[https://en.wikipedia.org/wiki/IDN\\_homograph\\_attack](https://en.wikipedia.org/wiki/IDN_homograph_attack)], in which Latin characters are replaced by characters of a different alphabet in the domain name. The attacks are predefined, so no knowledge of phishing techniques is required.

Title: Usability Study of Mobile Authentication for Elderly Users with Rheumatoid Arthritis (English only)

Number of students: 1 Ba/Ma

Description: Authentication is an ever important topic, especially in the mobile context. However, it becomes even more relevant when considering accessibility to it. Nowadays, a common authentication method is using a PIN. Yet, given the low hand mobility of users affected by rheumatoid arthritis, sometimes using PINs can be difficult. In this topic, the student will conduct several sessions of an already designed lab study with various participants using arthritis simulation gloves to evaluate three PIN-pad interfaces aimed at making authentication more accessible. The study will also investigate the preferences of users regarding PIN-pad interfaces through drawings and proposals of changes. The student will then analyse the results through inferential statistics. Depending on the quality of the outcome, the results will then be published in a paper and the student will be added to the authors list.

This event counts towards the KASTEL certificate. Further information on how to obtain the certificate can be found on the SECUSO website ([https://secuso.aifb.kit.edu/Studium\\_und\\_Lehre.php](https://secuso.aifb.kit.edu/Studium_und_Lehre.php)).



### Lab Realisation of innovative services (Master)

2512205, WS 24/25, 3 SWS, Language: German, [Open in study portal](#)

**Practical course (P)  
Blended (On-Site/Online)**

### Content

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

### Organizational issues

Informationen zu Themen und die Anmeldung erfolgt vor Praktikumsbeginn im Wiwi-Portal

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

**Practical Course Linked Data and the Semantic Web (Master)**2512314, WS 24/25, 3 SWS, Language: German/English, [Open in study portal](#)**Practical course (P)  
On-Site****Content**

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

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

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

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

Topics of interest include, but are not limited to:

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

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

**Practical Course Cognitive automobiles and robots (Master)**2512501, WS 24/25, 3 SWS, Language: German/English, [Open in study portal](#)**Practical course (P)  
Blended (On-Site/Online)****Content**

The lab is intended as a practical supplement to courses such as "Machine Learning 1/2".

Scientific topics, mostly in the area of autonomous driving and robotics, will be addressed in joint work with ML/KI methods. The goal of the internship is for participants to design, develop, and evaluate ML Software system.

In addition to the scientific goals, such as the study and application of methods, the aspects of project-specific teamwork in research (from specification to presentation of results) are also worked on in this internship.

The individual projects require the analysis of the set task, selection of appropriate methods, specification and implementation and evaluation of the solution approach. Finally, the selected solution is to be documented and presented in a short lecture.

**Learning Objectives:**

- Students will be able to practically apply theoretical knowledge from lectures on machine learning to a selected area of current research.
- Students will be proficient in analyzing and solving thematic problems.
- Students will be able to evaluate, document, and present their concepts and results.

**Recommendations:**

- Theoretical knowledge of machine learning and/or AI.
- Python knowledge
- Initial experience with deep learning frameworks such as PyTorch/Jax/Tensorflow may be beneficial.

**Workload:**

The workload of 5 credit points consists of practical implementation of the selected solution, as well as time for literature research and planning/specification of the selected solution. In addition, a short report and presentation of the work performed 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 24/25, 3 SWS, Language: English, [Open in study portal](#)**Practical course (P)  
On-Site**



**Content**

The ISE project lab is based on the summer semester lecture "Information Service Engineering". Goal of the course is to work on a given 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. 16 pages)
- Participation and contribution of the students during the course
- Software development and delivery

**Notes:**

The ISE project lab can also be credited as a **seminar** (if necessary).

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

Participation will be restricted to 16 students.

Participation in the lecture "Information Service Engineering" (summer semester) is required. There are video recordings on our youtube channel.

**ISE Tutor Team:**

- Dr. Genet Asefa Gesese
- Dr. Shufan Jiang
- Dr. Anna Jacysyzn
- M. Sc. Ebrahim Norouzi
- M. Sc. Sarah Rebecca Ondraszek
- B. Sc. Tabea Tietz

**WS 2024/25 Tasks List:**

- Generating Competency Questions from ontologies using LLMs
- Ontology Verbalization and Categorization via LLMs
- Towards the Automated Extraction of Patterns from Ontologies with Large Language Models
- Leveraging Large Language Models for Artwork Recognition from Historical Texts
- Identification of mathematical definitions from Scientific Papers
- The Chronicles of Culture Knowledge Graphs: Creating Data Stories with Generative AI

**Literature**

ISE video channel on youtube: <https://www.youtube.com/channel/UCjkkhNSNuXrJpMYZoeSBw6Q/>



## T

## 7.6 Course: Advanced Lab Realization of Innovative Services (Master) [T-WIWI-112914]

**Responsible:** Prof. Dr. Andreas Oberweis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Events					
ST 2024	2512205	<a href="#">Lab Realisation of innovative services (Master)</a>	3 SWS	Practical course / 🎧	Schiefer, Schüler, Toussaint
WT 24/25	2512205	<a href="#">Lab Realisation of innovative services (Master)</a>	3 SWS	Practical course / 🔄	Toussaint, Schiefer, Schüler
Exams					
ST 2024	7900148	<a href="#">Advanced Lab Realization of innovative services (Master)</a>			Oberweis
WT 24/25	7900218	<a href="#">Advanced Lab Linked Data and the Semantic Web (Master)</a>			Käfer
WT 24/25	7900306	<a href="#">Advanced Lab Realization of Innovative Services (Master)</a>			Oberweis

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.

### Annotation

As part of the lab, the participants should work together in small groups to produce innovative services (mainly for students). Further information can be found on the ILIAS page of the lab.

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

## V

### Lab Realisation of innovative services (Master)

2512205, SS 2024, 3 SWS, Language: German, [Open in study portal](#)

Practical course (P)  
On-Site

### Content

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

### Organizational issues

Informationen zu Themen und die Anmeldung erfolgt vor Praktikumsbeginn im Wiwi-Portal  
<https://portal.wiwi.kit.edu/ys>

## V

### Lab Realisation of innovative services (Master)

2512205, WS 24/25, 3 SWS, Language: German, [Open in study portal](#)

Practical course (P)  
Blended (On-Site/Online)

### Content

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

### Organizational issues

Informationen zu Themen und die Anmeldung erfolgt vor Praktikumsbeginn im Wiwi-Portal  
<https://portal.wiwi.kit.edu/ys>

## T

**7.7 Course: Advanced Lab Security [T-WIWI-109786]**

**Responsible:** Prof. Dr. Melanie Volkamer  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Exams			
WT 24/25	7900046	<a href="#">Advanced Lab Security (Master)</a>	Volkamer

**Competence Certificate**

The alternative exam assessment consists of:

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

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

**Prerequisites**

None

**Recommendation**

Knowledge from the lecture "Information Security" is recommended.

**Annotation**




Form of teaching and learning: Advanced lab





## T

## 7.8 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-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Events					
ST 2024	2512554	<a href="#">Practical lab Security, Usability and Society (Bachelor)</a>	3 SWS	Practical course / 	Volkamer, Strufe, Mayer, Berens, Mossano, Hennig, Veit, Länge
WT 24/25	2512554	<a href="#">Praktikum Security, Usability and Society (Bachelor)</a>	3 SWS	Practical course / 	Volkamer, Strufe, Berens, Länge, Mossano, Hennig, Hilt, Veit
WT 24/25	2512555	<a href="#">Praktikum Security, Usability and Society (Master)</a>	3 SWS	Practical course / 	Volkamer, Strufe, Berens, Länge, Mossano, Hennig, Hilt, Veit
Exams					
ST 2024	7900029	<a href="#">Practical lab Security, Usability and Society (Bachelor)</a>			Volkamer
WT 24/25	7900116	<a href="#">Advanced Lab Security, Usability and Society (Bachelor)</a>			Volkamer
WT 24/25	7900307	<a href="#">Advanced Lab Security, Usability and Society (Master)</a>			Volkamer

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

### Competence Certificate

The alternative exam assessment consists of:

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

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

### Prerequisites

None

### Recommendation

Knowledge from the lecture "Information Security" is recommended.

### Annotation

The course will not be offered in the summer semester 2023.

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

## V

### Practical lab Security, Usability and Society (Bachelor)

2512554, SS 2024, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)  
Online

**Content**

The Praktikum Security, Usability and Society will cover topics both of usable security and privacy programming, and how to conduct user studies. To reserve a place, please, register on the WiWi portal and send an email with your chosen topic, plus a back-up one, to [mattia.mossano@kit.edu](mailto:mattia.mossano@kit.edu). Topics are assigned first-come-first-served until all of them are filled. Topics in italics have already been assigned.

Application deadline 12.04.2024

Assignment 15.04.2024

Confirmation deadline 19.04.2024

**Important dates:**

Kick-off: 17.04.2024, 09:00 AM CET in Big Blue Button - [Link](#)

Report & code feedback deadline: 26.07.2024, 23:59 CET

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Presentation draft deadline: 06.09.2024, 23:59 CET

Feedback on presentation draft: 13.09.2024, 23:59 CET

Final presentation deadline: 17.09.2024, 23:59 CET

Presentation day: 18.09.2024, 09:00 CET

Topics:

**Privacy Friendly Apps**

In this area, 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.

Title: NoPhish App

Number of students: 2 Ba/Ma

Description: The NoPhish app was one of the first measures from the NoPhish concept. The app has been around for a long time and has not been updated since then. Accordingly, the task of the project is to make the app functional for the current Android version. The app is also to be optimised so that updates, e.g. new chapters, can be added easily.

**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, e.g. as an extension like 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.

Title: Hacking TORPEDO

Number of students: 1-2 Ba/Ma

Description: TORPEDO has existed for many years both as a Thunderbird add-on and as a web extension. TORPEDO is intended to help address various forms of phishing attacks and thereby protect the user, e.g. against various manipulations of the domain or additional tooltips. However, no targeted attacks on TORPEDO have yet been found. The aim of the work is to subject TORPEDO to a stress test and also to develop attacks that specifically target the implementation of TORPEDO.

**Run Usable Security Studies and Results Analysis**

These topics are related to run and analyse the results of user-studies. Online studies, interviews and lab studies are all possible, depending on the topic. At the end of the semester, the students present a report / paper with the analyses conducted and a talk in which they present the results.

Title: Visualization of Eye Gaze Patterns during Authentication Tasks

Number of students: 1 Ba/Ma

Description: In this project, students will analyze and visualize eye gaze data collected during two specific authentication tasks: the Dot Task and the Slider Task. The primary objective is to represent subjects' eye movements visually, enhancing the understanding of gaze patterns during the authentication process. *\*Dot Task Visualization:\** For the Dot Task, participants were instructed to focus on a sequence of dots displayed on a screen. The dataset includes the positions of these dots and the corresponding gaze locations of the subjects. The student's task is to create a dynamic visualization that not only represents these positions accurately but also illustrates the sequence in which the dots were focused on by the subjects. *\*Slider Task Visualization:\** The Slider Task involved presenting participants with a series of images, for which both the images' locations on the screen and the subjects' gaze locations are recorded. The challenge is to develop a heatmap visualization based on this data, effectively demonstrating the concentration and dispersion of gaze points across different images.

Title: Compare BSI Phishing Game with the NoPhish Game

Number of students: 1 Ba

Description: The NoPhish app, one of the first implementations of the NoPhish concept, is a form of serious game. The BSI has also developed a game in the field of phishing. Both "games" use different approaches to impart knowledge from the same context. The aim is to evaluate the two games in terms of similarities and differences.

Title: Phishing Advice from Organizations (English Only)

Number of students: 1 Ba

Description: Many companies distribute information on how to recognise phishing via various channels such as e-mails, e.g. Amazon or Telekom. The question arises as to how helpful these tips are in reality. Are they too specific to the context of the company or so abstractly formulated that they are of no real help to users? The aim of the work is to collect various hints and then compare them with the hints of the NoPhish concept in order to find differences and similarities between the hints and the concept.

Title: Chatbots for Literature Reviews

Number of students: 1 Ba

Description: Chatbots are becoming increasingly popular and are already being used in various areas. But in what form can these bots be used for science? The variety of chatbots also raises the question of whether there are chatbots that are better suited to a scientific context. The aim is to identify a selection of chatbots and evaluate them in terms of their effectiveness for future literature research. To this end, the results of the chatbots will be compared with the ACM database in order to check their effectiveness for finding literature for a specific period of time.

Title: Phishing through homographic attacks in messengers and social networks

Number of students: 1-2 Ba/Ma

Description: The task will be to test three types of attacks in messengers and social networks that work in some email clients. First is the link mismatch attack, where the link text differs from the actual link target. Second is an attack in which the actual link target is disguised by URL encoding [[https://en.wikipedia.org/wiki/URL\\_encoding](https://en.wikipedia.org/wiki/URL_encoding)], and finally homographic attacks which uses Internationalized Domain Names [[https://en.wikipedia.org/wiki/IDN\\_homograph\\_attack](https://en.wikipedia.org/wiki/IDN_homograph_attack)], in which Latin characters are replaced by characters of a different alphabet in the domain name. The attacks are predefined, so no knowledge of phishing techniques is required.

Title: Usability Study of Mobile Authentication for Elderly Users with Rheumatoid Arthritis (English only)

Number of students: 1 Ba/Ma

Description: Authentication is an ever important topic, especially in the mobile context. However, it becomes even more relevant when considering accessibility to it. Nowadays, a common authentication method is using a PIN. Yet, given the low hand mobility of users affected by rheumatoid arthritis, sometimes using PINs can be difficult. In this topic, the student will conduct several sessions of an already designed lab study with various participants using arthritis simulation gloves to evaluate three PIN-pad interfaces aimed at making authentication more accessible. The study will also investigate the preferences of users regarding PIN-pad interfaces through drawings and proposals of changes. The student will then analyse the results through inferential statistics. Depending on the quality of the outcome, the results will then be published in a paper and the student will be added to the authors list.

This event counts towards the KASTEL certificate. Further information on how to obtain the certificate can be found on the SECUSO website ([https://secuso.aifb.kit.edu/Studium\\_und\\_Lehre.php](https://secuso.aifb.kit.edu/Studium_und_Lehre.php)).



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

2512554, WS 24/25, 3 SWS, Language: German/English, [Open in study portal](#)

**Practical course (P)**  
**Blended (On-Site/Online)**

## Content

The Praktikum Security, Usability and Society will cover topics both of usable security and privacy programming, and how to conduct user studies. To reserve a place, please, register on the WiWi portal and send an email with your chosen topic, plus a back-up one, to [mattia.mossano@kit.edu](mailto:mattia.mossano@kit.edu). Topics are assigned first-come-first-served until all of them are filled. Topics in italics have already been assigned.

Application deadline 25.10.2024  
 Assignment 28.10.2024  
 Confirmation deadline 30.10.2024

### Important dates:

Kick-off: 23.10.2024, 09:00 AM CET in Big Blue Button - [Link](#) and Kronenplatz 5.20, 3A-11.1  
 Report & code feedback deadline: 26.01.2025, 23:59 CET  
 Feedback on Report & code: 10.02.2025, 23:59 CET  
 Final report + code deadline: 17.02.2025, 23:59 CET  
 Presentation draft deadline: 23.02.2025, 23:59 CET  
 Feedback on presentation draft: 28.02.2025, 23:59 CET  
 Final presentation deadline: 07.03.2025, 23:59 CET  
 Presentation day: 11.03.2025, 09:00 CET

### Topics:

#### Privacy Friendly Apps

In this area, 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.

Title: NoPhish App Rework

Number of students: 2 Ba/Ma

Description: The NoPhish app was one of the first measures from the NoPhish concept. The app has been around for a long time and has not been updated since then. Accordingly, the task of the project is to make the app functional for the current Android version. The app is also to be optimized so that updates, e.g. new chapters, can be added easily.

#### Designing Security User studies

These topics are related to how to set up and conduct user studies of various types. Online studies, interviews and lab studies are possible. At the end of the semester, the students present a report / paper and a talk in which they present their methodologies and the results of small pre-studies.

Title: IT-Security and Privacy Studies in the health sector

Number of students: 1 Ba/Ma

Description: Cyberattacks in the healthcare sector are on the rise and medical facilities are increasingly becoming the target of hacker attacks. This often affects sensitive patient data or, in the event of a cyberattack, patient care. The German Federal Office for Information Security (BSI) reports that "[t]he security situation of the IT infrastructure of medical practices in Germany [...] has hardly been studied to date." The aim of the work is to find out which scientific studies already exist in the field of IT security and privacy and which best practices can be derived from these studies, e.g. on the subject of recruitment, study design or consideration of special needs.

Title: Understanding Privacy and Security Risk Awareness Among Sports Science Students at KIT

Number of students: 1 Ba

Description: Privacy and Security Awareness in Data Handling: The key issue is that many sports science students may not fully understand the privacy and security risks involved in handling sensitive data. As students increasingly deal with personal and research-related information, gaps in their awareness of data protection, such as risks of data breaches or misuse, can lead to significant vulnerabilities. The aim of the task is to design a survey that assesses their current understanding of these risks, helping to identify areas where further education or guidance is needed.

Title: Perception of Data Privacy and Security in Sports Science Education: Awareness Among Students at KIT

Number of students: 1 Ba

Description: Perception of Data Privacy and Security Concepts: The issue here is that sports science students, despite limited direct experience with handling research data, may still need a solid understanding of data privacy and security concepts for future academic or research work. Their perception of these issues in hypothetical scenarios relevant to their field will shape their preparedness for handling sensitive information. The goal of the task is to create a survey that gauges their general awareness and understanding, helping to identify any gaps that need addressing.

#### Run Usable Security Studies and Results Analysis

These topics are related to run and analyze the results of user-studies. Online studies, interviews and lab studies are all possible, depending on the topic. At the end of the semester, the students present a report / paper with the analyses conducted and a talk in which they present the results.

Title: Visualization of Eye Gaze Patterns during Authentication Tasks

Number of students: 1 Ba/Ma

Description: In this project, students will analyze and visualize eye gaze data collected during two specific authentication tasks: the Dot Task and the Slider Task. The primary objective is to represent subjects' eye movements visually, enhancing the understanding of gaze patterns during the authentication process. \*Dot Task Visualization:\* For the Dot Task, participants were instructed to focus on a sequence of dots displayed on a screen. The dataset includes the positions of these dots and the corresponding gaze locations of the subjects. The student's task is to create a dynamic visualization that not only represents these positions accurately but also illustrates the sequence in which the dots were focused on by the subjects. \*Slider Task Visualization:\* The Slider Task involved presenting participants with a series of images, for which both the images' locations on the screen and the subjects' gaze locations are recorded. The challenge is to develop a heatmap visualization based on this data, effectively demonstrating the concentration and dispersion of gaze points across different images.

Title: Compare BSI Phishing Game with the NoPhish Game

Number of students: 1 Ba

Description: The NoPhish app, one of the first implementations of the NoPhish concept, is a form of serious game. The BSI has also developed a game in the field of phishing. Both "games" use different approaches to impart knowledge from the same context. The aim is to evaluate the two games in terms of similarities and differences.

Title: Chatbots for Literature Reviews

Number of students: 1 Ba

Description: Chatbots are becoming increasingly popular and are already being used in various areas. But in what form can these bots be used for science? The variety of chatbots also raises the question of whether there are chatbots that are better suited to a scientific context. The aim is to identify a selection of chatbots and evaluate them in terms of their effectiveness for future literature research. To this end, the results of the chatbots will be compared with the ACM database in order to check their effectiveness for finding literature for a specific period of time.

Title: Phishing Advice from Organizations (English Only)

Number of students: 1 Ba

Description: Many companies distribute information on how to recognize phishing via various channels such as e-mails, e.g. Amazon or Telekom. The question arises as to how helpful these tips are in reality. Are they too specific to the context of the company or so abstractly formulated that they are of no real help to users? The aim of the work is to collect various hints and then compare them with the hints of the NoPhish concept in order to find differences and similarities between the hints and the concept.

Title: How do website owners become aware that their website was hacked?

Number of students: 1 Ba/Ma

Description: We identified website owners that were affected by a hack on their website and sent them a notification. During the course of the notification process, we also identified several websites who seemingly remediated the hack before our notification. We now wanted to find out, how those website owners got aware of the hack. If they were notified by a third party, we would also like to know how and by whom they were notified and what their feelings were with respect to the notification.

Title: Cognitive Walkthrough for applying, installing, and using an S/MIME certificate at KIT

Number of students: 1-2 Ba/Ma

Description: The main application of S/MIME is the encryption and signing of e-mail messages. The KIT offers all members the opportunity to have S/MIME certificates issued and has recently started using a new process of the European research network GÉANT for this purpose. The aim of this work is to carry out a cognitive walkthrough with members of the KIT to apply for, set up and use S/MIME certificates and to identify problem areas and obstacles.

Title: Understanding Privacy and Security Risk Awareness Among Sports Science Students at KIT

Number of students: 1 Ba/Ma

Description: Privacy and Security Awareness in Data Handling: The key issue is that many sports science students may not fully understand the privacy and security risks associated with handling sensitive data. This lack of awareness can lead to significant vulnerabilities when dealing with personal or research-related information. The aim of the pilot survey and preliminary analysis task is to distribute a concise survey to a small group of students to gather initial data on their awareness of these risks, followed by an analysis of the results to identify trends and gaps in understanding.

Title: Perception of Data Privacy and Security in Sports Science Education: Awareness Among Students at KIT

Number of students: 1 Ba/Ma

Description: Perception of Data Privacy and Security Concepts: The issue at hand is that sports science students, despite limited direct experience with research data, require a solid understanding of data privacy and security concepts for their future academic and research endeavors. Their perception of these issues is crucial for their preparedness in handling sensitive information. The aim of the pilot survey and preliminary analysis task is to administer a survey to assess their general understanding and awareness, and then analyze the responses to pinpoint any gaps in knowledge that need to be addressed.

This event counts towards the KASTEL certificate. Further information on how to obtain the certificate can be found on the SECUSO website ([https://secuso.aifb.kit.edu/Studium\\_und\\_Lehre.php](https://secuso.aifb.kit.edu/Studium_und_Lehre.php)).



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

2512555, WS 24/25, 3 SWS, Language: German/English, [Open in study portal](#)

**Practical course (P)**  
**Blended (On-Site/Online)**



## Content

Das Praktikum Sicherheit, Benutzerfreundlichkeit und Gesellschaft wird sich sowohl mit der Programmierung von benutzerfreundlicher Sicherheit und Datenschutz als auch mit der Durchführung von Benutzerstudien befassen. Um einen Platz zu reservieren, melden Sie sich bitte auf dem WiWi-Portal an und senden Sie eine E-Mail mit Ihrem Wunschthema und einem Ersatzthema an [mattia.mossano@kit.edu](mailto:mattia.mossano@kit.edu). Die Themen werden in der Reihenfolge des Eingangs vergeben, bis alle Plätze vergeben sind. Kursiv gedruckte Themen sind bereits vergeben.

Bewerbungsfrist 25.10.2024  
Zuweisung 28.10.2024  
Bestätigungsfrist 30.10.2024

### Wichtige Daten:

Kick-off: 23.10.2024, 09:00 Uhr MEZ in Big Blue Button - [Link](#) und Kronenplatz 5.20, 3A-11.1  
Report- und Code-Feedback Frist: 26.01.2025, 23:59 Uhr MEZ  
Feedback zu Bericht und Code: 10.02.2025, 23:59 Uhr MEZ  
Finalen report + Code-Frist: 17.02.2025, 23:59 Uhr MEZ  
Frist für den Präsentationsentwurf: 23.02.2025, 23:59 Uhr MEZ  
Feedback zum Präsentationsentwurf: 28.02.2025, 23:59 Uhr MEZ  
Frist für die finalen Präsentation: 07.02.2025, 23:59 Uhr MEZ  
Präsentationstag: 11.03.2025, 09:00 Uhr MEZ

### Themen:

#### Privacy Friendly Apps

In diesem Fach vervollständigen die Schüler eine App (oder eine Erweiterung einer App) unter unseren datenschutzfreundlichen Apps. Klicken Sie auf den folgenden Link, um mehr darüber zu erfahren: <https://secuso.aifb.kit.edu/105.php>. Den Schülern wird eine Punkteliste mit Zielen zur Verfügung gestellt, die sowohl grundlegende Funktionen enthält, die für das Bestehen des Kurses erforderlich sind, als auch fortgeschrittenere, die die Abschlussnote verbessern.

Titel: NoPhish App Rework

Anzahl der Studierenden: 2 Ba/Ma

Beschreibung: Die NoPhish App war eine der ersten Maßnahmen aus dem NoPhish Konzept. Die App existiert bereits seit einer langen Zeit und wurde seit dieser Zeit nicht mehr aktualisiert. Entsprechend ist es die Aufgabe die App im Rahmen der Arbeit sowohl für die aktuelle Android Version funktionsfähig zu machen. Ebenso soll die App dahin gehend optimiert werden, dass einfach Aktualisierungen z.B. neue Kapitel ergänzt werden können

#### Designing Security User Studies

Diese Themen beziehen sich auf die Einrichtung und Durchführung von Benutzerstudien verschiedener Art. Online-Studien, Interviews und Laborstudien sind möglich. Am Ende des Semesters präsentieren die Studierenden einen Bericht/Aufsatz und einen Vortrag, in dem sie ihre Methoden und die Ergebnisse kleiner Vorstudien vorstellen.

Titel: Usability of Password Managers in Virtual Reality

Anzahl der Studenten: 2 Ma

Beschreibung: Die vorherrschende Form der Authentifizierung in Virtual Reality (VR) sind Passwörter. Passwörter stellen aufgrund der speziellen Eingabemethoden und der virtuellen Tastatur eine Belastung für die Nutzer in der VR-Umgebung dar [Stephenson, S. et al (2022). SoK: Authentifizierung in Augmented und Virtual Reality]. Passwort-Manager (PMs) können den Nutzer bei der Bewältigung dieses Problems unterstützen [Mayer, P. et al. (2022). Why Users (Don't) Use Password Managers at a Large Educational Institution]. Sie bieten Auto-Filling-Funktionen, speichern Anmeldedaten in einer Übersicht oder generieren komplexe und sichere Passwörter. Besonders im VR-Kontext, wo die Eingabe eines Passworts langsam und komplex ist, können PMs von Vorteil sein. Wir wollen die verschiedenen PMs in VR erforschen und die Benutzerfreundlichkeit testen, um Herausforderungen und mögliche Lösungen zu finden.

Titel: IT-Sicherheits- und Datenschutzstudien im Gesundheitssektor

Anzahl der Studenten: 1 Ba/Ma

Beschreibung: Cyberattacken im Gesundheitswesen nehmen zu, und medizinische Einrichtungen werden zunehmend zum Ziel von Hackerangriffen. Betroffen sind oft sensible Patientendaten oder, im Falle eines Cyberangriffs, die Patientenversorgung. Das Bundesamt für Sicherheit in der Informationstechnik (BSI) berichtet, dass „[d]ie Sicherheitslage der IT-Infrastruktur von Arztpraxen in Deutschland [...] bisher kaum untersucht wurde.“ Ziel der Arbeit ist es, herauszufinden, welche wissenschaftlichen Studien im Bereich IT-Sicherheit und Datenschutz bereits existieren und welche Best Practices sich daraus ableiten lassen, z.B. zum Thema Rekrutierung, Studiendesign oder Berücksichtigung besonderer Bedürfnisse.

#### Run Usable Security Studies and Results Analysis

Diese Themen beziehen sich auf die Durchführung und Analyse der Ergebnisse von Benutzerstudien. Je nach Thema sind Online-Studien, Interviews und Laborstudien möglich. Am Ende des Semesters präsentieren die Studierenden einen Bericht/ eine Arbeit mit den durchgeführten Analysen und einen Vortrag, in dem sie die Ergebnisse präsentieren.



Titel: Visualization of Eye Gaze Patterns during Authentication Tasks

Anzahl der Studenten: 1 Ba/Ma

Beschreibung: In diesem Projekt werden die Studenten Blickdaten analysieren und visualisieren, die während zweier spezieller Authentifizierungsaufgaben gesammelt wurden: die Punktaufgabe und die Schieberegleraufgabe. Das Hauptziel besteht darin, die Augenbewegungen der Probanden visuell darzustellen, um das Verständnis der Blickmuster während des Authentifizierungsprozesses zu verbessern. \*Visualisierung der Punktaufgabe:\* Bei der Punktaufgabe wurden die Teilnehmer angewiesen, sich auf eine Folge von Punkten zu konzentrieren, die auf einem Bildschirm angezeigt wurden. Der Datensatz enthält die Positionen dieser Punkte und die entsprechenden Blickpositionen der Probanden. Die Aufgabe der Studenten besteht darin, eine dynamische Visualisierung zu erstellen, die nicht nur diese Positionen genau wiedergibt, sondern auch die Reihenfolge veranschaulicht, in der die Probanden die Punkte fokussiert haben. \*Visualisierung der Slider-Aufgabe:\* Bei der Slider-Aufgabe wird den Teilnehmern eine Reihe von Bildern präsentiert, für die sowohl die Positionen der Bilder auf dem Bildschirm als auch die Blickpositionen der Probanden aufgezeichnet werden. Die Herausforderung besteht darin, auf der Grundlage dieser Daten eine Heatmap-Visualisierung zu entwickeln, die die Konzentration und Streuung der Blickpunkte über die verschiedenen Bilder hinweg effektiv darstellt.

Titel: Wie erfahren Website-Besitzer, dass ihre Website gehackt wurde?

Anzahl der Studenten: 1 Ba/Ma

Beschreibung: Wir haben Website-Besitzer identifiziert, die von einem Hack auf ihrer Website betroffen waren, und ihnen eine Benachrichtigung geschickt. Im Laufe des Benachrichtigungsprozesses haben wir auch mehrere Websites identifiziert, die den Hack anscheinend vor unserer Benachrichtigung behoben hatten. Wir wollten nun herausfinden, wie diese Website-Besitzer von dem Hack erfahren haben. Wenn sie von einer dritten Partei benachrichtigt wurden, möchten wir auch wissen, wie und von wem sie benachrichtigt wurden und wie sie die Benachrichtigung empfunden haben.

Titel: Kognitiver Walkthrough zur Beantragung, Installation und Nutzung eines S/MIME-Zertifikats am KIT

Anzahl der Studenten: 1-2 Ba/Ma

Beschreibung: Die Hauptanwendung von S/MIME ist die Verschlüsselung und Signierung von E-Mail-Nachrichten. Das KIT bietet allen Mitgliedern die Möglichkeit, sich S/MIME-Zertifikate ausstellen zu lassen und nutzt dazu seit kurzem ein neues Verfahren des europäischen Forschungsnetzes GÉANT. Das Ziel dieser Arbeit ist es, mit den Mitgliedern des KIT einen kognitiven Walkthrough zur Beantragung, Einrichtung und Nutzung von S/MIME-Zertifikaten durchzuführen und Problembereiche und Hindernisse zu identifizieren.

Titel: Verständnis für Datenschutz- und Sicherheitsrisiken unter Sportwissenschaftsstudenten am KIT

Anzahl der Studierenden: 1 Ba/Ma

Beschreibung: Sensibilisierung für Datenschutz und Sicherheit im Umgang mit Daten: Das Hauptproblem ist, dass viele Sportwissenschaftsstudenten die mit dem Umgang mit sensiblen Daten verbundenen Datenschutz- und Sicherheitsrisiken nicht vollständig verstehen. Dieses mangelnde Bewusstsein kann zu erheblichen Schwachstellen im Umgang mit persönlichen oder forschungsbezogenen Informationen führen. Das Ziel der Pilotumfrage und der vorläufigen Analyse ist es, eine kurze Umfrage an eine kleine Gruppe von Studenten zu verteilen, um erste Daten über ihr Bewusstsein für diese Risiken zu sammeln, gefolgt von einer Analyse der Ergebnisse, um Trends und Wissenslücken zu ermitteln.

Titel: Wahrnehmung von Datenschutz und Datensicherheit in der sportwissenschaftlichen Ausbildung: Bewusstsein unter Studierenden am KIT

Anzahl der Studierenden: 1 Ba/Ma

Beschreibung: Wahrnehmung von Datenschutz- und Sicherheitskonzepten: Es geht darum, dass Studierende der Sportwissenschaften trotz begrenzter direkter Erfahrung mit Forschungsdaten ein solides Verständnis von Datenschutz- und Sicherheitskonzepten für ihre zukünftigen akademischen und Forschungsbemühungen benötigen. Ihre Wahrnehmung dieser Themen ist entscheidend für ihre Bereitschaft, mit sensiblen Informationen umzugehen. Ziel der Pilotumfrage und der vorläufigen Analyse ist es, eine Umfrage durchzuführen, um das allgemeine Verständnis und Bewusstsein der Studierenden zu bewerten, und dann die Antworten zu analysieren, um etwaige Wissenslücken aufzuzeigen, die behoben werden müssen.


Dieses Ereignis zählt für das KASTEL-Zertifikat. Weitere Informationen zum Erhalt des Zertifikats finden Sie auf der SECUSO-Website ([https://secuso.aifb.kit.edu/Studium\\_und\\_Lehre.php](https://secuso.aifb.kit.edu/Studium_und_Lehre.php)).





## T

## 7.9 Course: Advanced Lab Sociotechnical Information Systems Development (Master) [T-WIWI-111125]

**Responsible:** Prof. Dr. Ali Sunyaev  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Events					
WT 24/25	2512401	<a href="#">Practical Course Sociotechnical Information Systems Development (Master)</a>	3 SWS	Practical course / 	Sunyaev, Leiser
Exams					
ST 2024	7900173	<a href="#">Advanced Lab Development of Sociotechnical Information Systems (Master)</a>			Sunyaev
WT 24/25	7900143	<a href="#">Advanced Lab Development of Sociotechnical Information Systems (Master)</a>			Sunyaev

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

## T

## 7.10 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-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services](#)

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

Events					
ST 2024	2540535	<a href="#">Advanced Machine Learning</a>	2 SWS	Lecture	Nazemi
ST 2024	2540536	<a href="#">Exercise Advanced Machine Learning</a>	1 SWS	Practice	Nazemi
Exams					
ST 2024	7900227	<a href="#">Advanced Machine Learning</a>			Geyer-Schulz
WT 24/25	7900253	<a href="#">Advanced Machine Learning (Nachklausur SoSe 2024)</a>			Geyer-Schulz

**Competence Certificate**

Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five 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 2024, 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

## 7.11 Course: Advanced Machine Learning and Data Science [T-WIWI-111305]

**Responsible:** Prof. Dr. Maxim Ulrich  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-105659 - Advanced Machine Learning and Data Science](#)  
[M-WIWI-106409 - Digital Financial Economics](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	9	Grade to a third	Each term	4

Events					
ST 2024	2500016	<a href="#">Advanced Machine Learning and Data Science</a>	4 SWS	Project (P / 🔄)	Ulrich
Exams					
ST 2024	7900378	<a href="#">Advanced Machine Learning and Data Science</a>			Ulrich
WT 24/25	7900291	<a href="#">Advanced Machine Learning and Data Science</a>			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 "Advanced Machine Learning and Data Science".

### Prerequisites

The module Modeling the Dynamics of Financial Markets must be passed.

### Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-106660 - Modeling the Dynamics of Financial Markets](#) must have been passed.

### Annotation

The course is targeted to students with a major in Data Science and/or Machine Learning. It offers students the opportunity to develop hands-on knowledge on new developments in data science and machine learning. Please apply via the link: <https://portal.wiwi.kit.edu/forms/form/fbv-ulrich-msc-project>.

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

## V

### Advanced Machine Learning and Data Science

2500016, SS 2024, 4 SWS, Language: English, [Open in study portal](#)

Project (PRO)  
Blended (On-Site/Online)

### Content

The course is targeted to students with a major in Data Science and/or Machine Learning. It offers students the opportunity to develop hands-on knowledge on new developments in data science and machine learning.

### Organizational issues

Während des Kick-off Meetings in der ersten Wochen werden Themen vorgestellt.

Wir bereiten Themen für Studenten der Informatik, W-Ing und Wi-Ma vor.

Themen und studentische Bearbeiter werden nach dem Kick-off gematched.

### Literature


Literatur und Computerprogramme wird in der ersten Vorlesung bekannt gegeben.





T

**7.12 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](#)  
[M-WIWI-106410 - Economics & Management](#)

Type	Credits	Grading scale	Recurrence	Version
Oral examination	4,5	Grade to a third	Each winter term	2

Events					
WT 24/25	2579907	<a href="#">Advanced Management Accounting</a>	4 SWS	Lecture / 	Wouters, Dickemann, Letmathe

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](mailto:marc.wouters@kit.edu)).

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

V

**Advanced Management Accounting**

2579907, WS 24/25, 4 SWS, Language: English, [Open in study portal](#)

**Lecture (V)  
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

## 7.13 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](#)  
[M-WIWI-101639 - Econometrics and Statistics II](#)

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

Events					
WT 24/25	2550552	<a href="#">Advanced Statistical Techniques, Including Multivariate and Simulation Methods</a>	2 SWS	Lecture / 🗎	Grothe
WT 24/25	2550553	<a href="#">Exercises and Computer Labs in Advanced Statistical Techniques</a>	2 SWS	Practice / 🗎	Kaplan
Exams					
WT 24/25	7900289	<a href="#">Advanced Statistical Techniques, Including Multivariate and Simulation Methods</a>			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. The exam is offered every semester. Re-examinations are offered only for repeaters.

**Prerequisites**

None

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

## V

**Advanced Statistical Techniques, Including Multivariate and Simulation Methods** Lecture (V)  
 2550552, WS 24/25, 2 SWS, Language: English, [Open in study portal](#) On-Site

**Literature**

Skript zur Vorlesung



## T

## 7.14 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	Grading scale	Recurrence	Version
Oral examination	4,5	Grade to a third	Irregular	2

Events					
WT 24/25	2500089	<a href="#">Advanced Stochastic Optimization</a>	2 SWS	Lecture / 📺	Rebennack
WT 24/25	2550468	<a href="#">Übung zu Advanced Stochastic Optimization</a>	1 SWS	Practice / 🔄	Rebennack
Exams					
ST 2024	7900034	<a href="#">Advanced Stochastic Optimization</a>			Rebennack
WT 24/25	7900025	<a href="#">Advanced Stochastic Optimization</a>			Rebennack

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

**Competence Certificate**

The assessment consists of an oral exam (20 minutes). The exam is offered every semester.

**Prerequisites**

None.

**Recommendation**

It is recommended to attend the lecture "Introduction to Stochastic Optimization" before attending the lecture "Advanced Stochastic Optimization".

**Annotation**

Lectures and tutorials are offered irregularly.

T

## 7.15 Course: Advanced Topics in Digital Management [T-WIWI-111912]

**Responsible:** Prof. Dr. Petra Nieken  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each summer term	1

Events					
ST 2024	2573016	<a href="#">Advanced Topics in Digital Management</a>	2 SWS	Colloquium (K / ●)	Nieken, Mitarbeiter

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

### Competence Certificate

Alternative exam assessment. The following aspects are included:

- Regular and active participation in the course dates
- Presentation of a given research topic.

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.

### Recommendation

We recommend visiting the course Incentives in Organization before taking this course.

The course is strongly recommended for students interested in empirical research in the areas digital HRM, personnel economics, and leadership and those who are interest in an academic career path.

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

V

### Advanced Topics in Digital Management

2573016, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

Colloquium (KOL)  
On-Site

**Content**

The students will discuss and analyze selected research papers in the areas digital HRM, personnel economics, and leadership with a focus on digital management. The students will present research papers and discuss research methods and designs as well as content. They will develop an own research design on a predefined topic.

**Aim**

The student

- Looks into current research topics in the areas HRM, personnel economics, and leadership with a focus on digital management and AI.
- Analyzes research papers in detail and evaluates the research outcomes.
- Trains their presentation skills and discussion skills.
- Practices scientific debating.
- Learns to critically evaluate research methods and trains the scientific discussion culture.
- Gains deeper knowledge in the area of digital HRM and management.
- Learns to evaluate research designs and takes into account the ethical dimension of research.
- Learns how to develop an own research design and idea.

**Notes**

Due to the interactive nature of the course, the number of participants is limited. If you are interested, please contact Prof. Nieken by email.

**Workload**

The total workload for this course is approximately 90 hours.

Lecture: 30 hours

Preparation: 45 hours

Exam preparation: 15 hours

**Literature**

Selected research papers

**Organizational issues**



Geb. 05.20, Raum 2A-25, Termine werden bekannt gegeben


## T

## 7.16 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-101497 - Agglomeration and Innovation](#)  
[M-WIWI-101500 - Microeconomic Theory](#)  
[M-WIWI-101502 - Economic Theory and its Application in Finance](#)

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

Events					
ST 2024	2520527	<a href="#">Advanced Topics in Economic Theory</a>	2 SWS	Lecture / 	Mitusch, Brumm
ST 2024	2520528	<a href="#">Übung zu Advanced Topics in Economic Theory</a>	1 SWS	Practice / 	Pegorari, Corbo
Exams					
ST 2024	00227	<a href="#">Advanced Topics in Economic Theory</a>			Mitusch, Brumm
ST 2024	7900329	<a href="#">Advanced Topics in Economic Theory</a>			Mitusch, Brumm

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

**Competence Certificate**

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

**Prerequisites**

None

**Recommendation**

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

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

## V

**Advanced Topics in Economic Theory**

2520527, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)  
On-Site**

**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

## 7.17 Course: Advanced Topics in Human Resource Management [T-WIWI-111913]

**Responsible:** Prof. Dr. Petra Nieken  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each winter term	1

Events					
WT 24/25	2573014	<a href="#">Advanced Topics in Human Resource Management</a>	2 SWS	Colloquium (K / ●)	Nieken, Mitarbeiter

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

### Competence Certificate

Alternative exam assessment. The following aspects are included:

- Regular and active participation in the course dates
- Presentation of a given research topic.

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.

### Recommendation

We recommend visiting the course Incentives in Organization before taking this course.

The course is strongly recommended for students interested in empirical research in the areas HRM, personnel economics, and leadership and those who are interest in an academic career path.

### Annotation

Teaching and learning format: Colloquium

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

V

### Advanced Topics in Human Resource Management

2573014, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

Colloquium (KOL)  
On-Site

**Content**

The students will discuss and analyze selected research papers in the areas HRM, personnel economics, and leadership. The students will present research papers and discuss research methods and designs as well as content. They will develop an own research design on a predefined topic.

**Aim**

The student

- Looks into current research topics in the areas HRM, personnel economics, and leadership.
- Analyzes research papers in detail and evaluates the research outcomes.
- Trains their presentation skills and discussion skills.
- Practices scientific debating.
- Learns to critically evaluate research methods and trains the scientific discussion culture.
- Gains deeper knowledge in the area of HRM.
- Learns to evaluate research designs and takes into account the ethical dimension of research.
- Learns how to develop an own research design and idea.

**Notes**

Due to the interactive nature of the course, the number of participants is limited. If you are interested, please contact Prof. Nieken by email.

**Workload**

The total workload for this course is approximately 90 hours.

Lecture: 30 hours

Preparation: 45 hours

Exam preparation: 15 hours

**Literature**

Selected research papers

**Organizational issues**



siehe Homepage





T

## 7.18 Course: Agent-Based Modelling and Simulation [T-WIWI-113629]

**Responsible:** Prof. Dr. Sanja Lazarova-Molnar  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

Type	Credits	Grading scale	Recurrence	Version
Oral examination	4,5	Grade to a third	Each winter term	2

Events					
WT 24/25	2511102	<a href="#">Agent-Based Modelling and Simulation</a>	2 SWS	Lecture / 	Lazarova-Molnar, Ghasemi
WT 24/25	2511103	<a href="#">Exercises Agent-Based Modelling and Simulation</a>	1 SWS	Practice / 	Lazarova-Molnar, Ghasemi
Exams					
WT 24/25	79AIFB_ABMS_A3	<a href="#">Agent-Based Modelling and Simulation</a>	Lazarova-Molnar		

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

**Competence Certificate**

The exam will be offered as an oral exam (approx.20 min).

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

**Prerequisites**

None

**Annotation**

Instruction is in the form of lectures and exercises. A detailed course schedule will be published before the start of the semester.

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

V

**Agent-Based Modelling and Simulation**

2511102, WS 24/25, 2 SWS, [Open in study portal](#)

**Lecture (V)**  
On-Site

**Content****Inhalt**

This course on Agent-Based Modeling and Simulation (ABMS) provides an in-depth exploration of both theoretical and practical aspects of the field. Designed for students with a foundational understanding of programming, mathematics, and computational models, the course equips participants with the knowledge and skills to develop, simulate, and analyze agent-based models. Throughout the course, students will explore fundamental concepts, key theories, and the principles of ABMS. Practical sessions will focus on implementing models using Python and the Mesa library, covering essential topics such as agent behaviors, complex systems, emergent phenomena, and game theory. The course also emphasizes model validation, verification, and calibration, as well as simulation optimization techniques. Advanced topics include multi-agent systems, performance scalability, and the integration of data. We will explore example models from relevant application areas, including smart manufacturing, supply chain digitalization, and other fields where ABMS can provide significant insights. The curriculum will feature practice-oriented student projects, allowing participants to apply the course's learning to real-world problems and present their findings. Ethical considerations and future directions in ABMS are also discussed, ensuring a well-rounded educational experience.

**Competence Certificate**

Depending on the number of course participants, the exam will be offered as an oral exam (20 min) or as a written exam (60 min). The exam takes place every semester and can be repeated at every regular examination date.

**Learning Objectives**

- **Knowledge:**

By the end of the course, students will be able to:

- Explain fundamental concepts of Agent-Based Modeling & Simulation (ABMS) and its applications in various fields.
- Describe components and structures of Agent-Based Models (ABMs), including agents, environments, and interactions.
- Differentiate between distinct types of simulation models and understand when to use ABMs.
- Discuss principles of model validation, verification, and calibration in the context of ABMS.
- Understand basics of complex systems and emergent behavior in the context of ABMs.
- Understand basics of Game Theory, Simulation Optimization, and Machine Learning within the domain of ABMS.
- Analyze theoretical frameworks and methodologies for developing ABMs. ◦ Evaluate ethical implications of ABM in research and application.

- **Competences:**

By the end of the course, students will be able to:

- Design and implement ABMs using Python with the Mesa library.
- Develop, debug, and test ABMs to ensure they accurately represent systems being modeled.
- Use Python and relevant libraries to simulate and visualize agent behaviors and system dynamics.
- Analyze and interpret results of simulations to draw meaningful conclusions.
- Communicate modeling results effectively through written reports and oral presentations.
- Apply ethical considerations in the development and use of AB simulation models.

**Prerequisites**

- **Basic Programming Knowledge**



- Understanding of fundamental programming concepts such as variables, loops, conditionals, and functions (preferably in Python).
- **Basic Mathematics and Statistics**
  - Familiarity with basic mathematical concepts (algebra, functions) and statistical concepts (mean, median, standard deviation).
- **Basic Understanding of Computational Models**
  - General knowledge of what models are and their purposes in different scientific fields.

### Form of Instruction

Lectures and exercises. A detailed course plan will be published before the start of semester.

### Literature

- Wilensky, U., & Rand, W. (2015). An introduction to agent-based modeling: Modeling natural, social, and engineered complex systems with NetLogo. Massachusetts: MIT Press.
- Grimm, V., & Railsback, S. F. (2012). Agent-based and individual based modeling: a practical introduction. New Jersey: Princeton University Press.
- North, Michael J., Macal, Charles M, and Oxford University Press. Managing Business Complexity Discovering Strategic Solutions with Agent-Based Modeling and Simulation. New York: Oxford UP, 2007. Oxford Scholarship Online.

T

## 7.19 Course: AI Innovation Ecosystems [T-WIWI-113849]

**Responsible:** Dr. Daniela Beyer  
Jennifer Scheydt

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

**Part of:** [M-WIWI-101507 - Innovation Management](#)  
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Irregular	1

Events					
WT 24/25	2500049	<a href="#">AI Innovation Ecosystems</a>	2 SWS	Seminar / 📱	Beyer, Weissenberger-Eibl

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

### Competence Certificate

Non exam assessment consisting of:

- (A) Discussion of literature on innovation ecosystems (15% )
  - Read 1 article / book chapter
  - Summarize core results in an excerpt
  - present
- (B) active participation in all 4 events
- (C) Presentation on an area of Cyber Valley or IPAI Heilbronn [in the group] (30%)
- (D) Preparation of a guided interview that can be conducted with a representative of IPAI / Cyber Valley [in the group] (15%)
- (E) Elaboration of the findings from C and D for an evaluation of a partial aspect of the IPAI / Cyber Valley [term paper in the semester-free period - approx. 15 pages in the group - based on the findings presented and the interview] (40%)

### Prerequisites

None

### Recommendation

It is recommended that the lecture: Innovation Management: Concepts, Strategies and Methods has already been attended.

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

V

### AI Innovation Ecosystems

2500049, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**  
**Online**

### Content

This research seminar uses the example of three innovation clusters in Baden-Württemberg to analyse innovation ecosystems and their potential special features in the field of artificial intelligence. The practical seminar benefits from expert input, but also places a clear focus on research methods and scientific work. A toolbox will be developed together, including literature reviews and interview techniques, which will later facilitate the work on the Master's thesis.

Firstly, the concept of innovation ecosystems is examined. Despite the frequently used term, the state of the art is still relatively open and an overview can be developed together. Then, using the example of the AI Health Innovation Cluster, a cluster is presented and its political history, structure and goal (achievement) are analysed. In the following two sessions, the IPAI and Cyber Valley will be analysed by experts and groups of students.



Since the students will be responsible for much of the seminar themselves, in addition to practical and methodological inputs, a preliminary meeting will take place on 31 October (6-7 pm) to allow sufficient preparation time. The seminar will take place virtually.





T

## 7.20 Course: Application of Social Science Methods (WiWi) [T-GEISTSOZ-109052]

**Responsible:** Prof. Dr. Gerd Nollmann  
**Organisation:** KIT Department of Humanities and Social Sciences  
**Part of:** [M-GEISTSOZ-101169 - Sociology](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	9	Grade to a third	Each term	2

Events					
ST 2024	5011006	<a href="#">Gender Pay Gap</a>	2 SWS	Seminar / 	Nollmann
ST 2024	5011008	<a href="#">Decomposition and Regression Analysis</a>	2 SWS	Seminar / 	Nollmann
Exams					
ST 2024	7400368	<a href="#">Application of Social Science Methods</a>			Nollmann, Staudt
ST 2024	7400453	<a href="#">Application of Social Science Methods (WiWi)</a>			Nollmann
ST 2024	7400725	<a href="#">Computational Social Science: Themen und Positionen im Deutschen Bundestag (Teil 1)</a>			Banisch

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

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-GEISTSOZ-104565 - Computer Aided Data Analysis](#) must have been passed.

T

**7.21 Course: Applied Econometrics [T-WIWI-111388]**

**Responsible:** Prof. Dr. Melanie Schienle  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101638 - Econometrics and Statistics I](#)  
[M-WIWI-106411 - Statistics & Econometrics](#)

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

Events					
WT 24/25	2520020	<a href="#">Applied Econometrics</a>	2 SWS	Lecture / 🗎	Krüger, Eberl
WT 24/25	2520021	<a href="#">Tutorial in Applied Econometrics</a>	2 SWS	Practice / 🗎	Eberl, Krüger
Exams					
ST 2024	7900007	<a href="#">Applied Econometrics</a>			Krüger

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

**Competence Certificate**

The assessment of this course is a written examination (90 min).

**Prerequisites**

None

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

V

**Applied Econometrics**

2520020, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**Content**

The course starts with a concise review of core econometric topics (in particular, the linear regression model). It then presents methods for causal inference: The potential outcomes approach, methods for analyzing randomized controlled trials, and methods for analyzing observational data (e.g., regression discontinuity). Empirical examples and R code are used to illustrate the methodological concepts.

**Learning goals**

Students understand the properties of various econometric estimators and research designs, and can implement econometric estimators using R software.

**Workload**

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

**Literature**

The following book is the main reference for the course:

Ding, P. (2024). A First Course in Causal Inference. Routledge.

Further literature will be announced in class.

T

**7.22 Course: Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services [T-WIWI-110339]**

**Responsible:** Prof. Dr. Ali Sunyaev  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Events					
ST 2024	2511032	<a href="#">Applied Informatics - Internet Computing</a>	2 SWS	Lecture / 🎤	Sunyaev
ST 2024	2511033	<a href="#">Übungen zu Angewandte Informatik - Internet Computing</a>	1 SWS	Practice / 🔄	Sunyaev, Rank, Guse
Exams					
ST 2024	79AIFB_AI2_A2	<a href="#">Applied Informatics - Internet Computing (Registration until 21 July 2024)</a>			Sunyaev
WT 24/25	79AIFB_AI-IC_B4	<a href="#">Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services</a>			Sunyaev

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

**Competence Certificate**

The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is recommended for the written exam, which is offered at the end of the winter semester and at the end of the summer semester.

Successful participation in the exercise by submitting correct solutions to 50% of the exercises can earn a grade bonus. 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

**Applied Informatics - Internet Computing**2511032, SS 2024, 2 SWS, Language: German, [Open in study portal](#)**Lecture (V)  
On-Site****Content**

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

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

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

**Learning objectives:**

The student learns about basic concepts and emerging technologies of distributed systems and internet computing. Practical topics will be deepened in lab classes.

**Recommendations:**

Knowledge of content of the module [WI1INFO].

**Workload:**

The total workload for this course is approximately 135-150 hours.

7 COURSES

Course: Applied Informatics – Principles of Internet Computing:  
Foundations for Emerging Technologies and Future Services [T-  
WIWI-110339]

**Literature**

Wird in der Vorlesung bekannt gegeben

T

## 7.23 Course: Applied material flow simulation [T-MACH-112213]

**Responsible:** Dr.-Ing. Marion Baumann  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-WIWI-102805 - Service Operations](#)  
[M-WIWI-102832 - Operations Research in Supply Chain Management](#)

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

Events					
WT 24/25	2117054	<a href="#">Applied material flow simulation</a>	3 SWS	Lecture / Practice ( / )	Baumann

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

### Competence Certificate

The assessment consists of an oral exam (20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

### Prerequisites

None

### Recommendation

- Basic statistical knowledge and understanding
- Knowledge of a common programming language (Java, Python, ...)
- Recommended course: T-WIWI-102718 - Discrete Event Simulation in Production and Logistics

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

V

### Applied material flow simulation

2117054, WS 24/25, 3 SWS, Language: German, [Open in study portal](#)

Lecture / Practice (VÜ)  
On-Site

**Content****Learning Content:**

- Methods of modeling a simulation such as:
  - Discrete-event simulation
  - Agent based simulation
- Design of a simulation model of a material flow system
- Data exchange in simulation models
- Verification and validation of simulation models
- Execution of simulation studies
- Statistical evaluation and parameter study

This is an application-oriented course in which the course contents are applied and deepened using the Anylogic software.

**Learning Goals:**

Students are able to:

- select the appropriate simulation modeling method depending on a modeling objective and build a suitable simulation model for material flow systems,
- extend a simulation model in a meaningful way with data import and export,
- verify and validate a simulation model,
- conduct a simulation study efficiently and with meaningful results, and
- design and conduct a parameter study and statistically analyze and evaluate the results.

**Requirements:**

- Basic knowledge of the Java programming language

**Recommendations:**

- Basic statistical skills
- Recommended course: T-WIWI-102718 - Discrete Event Simulation in Production and Logistics

**Workload for 4,5 ECTS (135 h):**

- regular attendance: 21 hours
- self-study: 114 hours

**Organizational issues**

- **Im Wintersemester 2024/2025 ist die Veranstaltung auf maximal 30 Teilnehmer beschränkt.**
- **Die Anmeldung ist durch Beitritt zum ILIAS-Kurs und Ausfüllen des Anmeldeformulars (erforderliche Felder beim Beitritt zum ILIAS-Kurs) möglich.**
- **Die Anmeldung ist vom 01.09.2024 bis zum 30.09.2024 möglich.**

**Literature**

Borshev, A. (2022): The Big Book of Simulation Modeling - Multimethod Modeling with AnyLogic 8, <https://www.anylogic.de/resources/books/big-book-of-simulation-modeling/>.

Grigoryev, I. (2021): AnyLogic8 in Three Days, 5. Aufl., <https://www.anylogic.de/resources/books/free-simulation-book-and-modeling-tutorials/>.

Gutenschwager, K. et. al. (2017): Simulation in Produktion und Logistik, Springer Vieweg, Berlin.

VDI (2014): Simulation von Logistik-, Materialfluss- und Produktionssystemen - Grundlagen. VDI Richtlinie 3633, Blatt 1, VDI-Verlag, Düsseldorf.

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## T

## 7.24 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](#)

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

Events					
WT 24/25	2595650	<a href="#">Artificial Intelligence in Service Systems</a>	1.5 SWS	Lecture / 🔄	Kühl, Spitzer, Holstein
WT 24/25	2595651	<a href="#">Übung zu Artificial Intelligence in Service Systems</a>	1.5 SWS	Practice / 🎧	Kühl, Spitzer, Holstein
Exams					
ST 2024	7900226	<a href="#">Artificial Intelligence in Service Systems</a>			Satzger
WT 24/25	7900033	<a href="#">Artificial Intelligence in Service Systems</a>			Satzger

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

### 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

### Annotation

The course will be offered in the form of a flipped classroom concept starting in winter semester 2022/2023. The lecture will be recorded in advance and made available online. During the exercise classes, the contents of the lecture will be discussed and applied as part of programming exercises.

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

## V

## Artificial Intelligence in Service Systems

2595650, WS 24/25, 1.5 SWS, Language: English, [Open in study portal](#)

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

### Content

Artificial Intelligence (AI) and the application of machine learning is becoming more and more popular to solve relevant business challenges — both within isolated entities but also within co-creating systems (like value chains). However, it is not only essential to be familiar with precise algorithms but rather a general understanding of the necessary steps with a holistic view— from real-world challenges to the successful deployment of an AI-based solution. As part of this course, we teach the complete lifecycle of an AI project focusing on supervised machine learning challenges. We do so by also introducing the use of Python and the required packages like scikit-learn with exemplary data and use cases. 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. Apart from the technical aspects necessary when developing AI within service systems, we also shed light on the collaboration of humans and AI in such systems (e.g., with the support of XAI), topics of ethics and bias in AI, as well as AI's capabilities on being creative.

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. Besides technical aspects, they will gain an understanding of the broader challenges and aspects when dealing with AI. Students will be proficient with typical Python code for AI challenges.

### Organizational issues

The course will be offered in the form of a flipped classroom concept starting in winter semester 2022/2023. The lecture will be recorded in advance and made available online. During the exercise classes, the contents of the lecture will be discussed and applied as part of programming exercises.

## Literature

- Baier, L., Kühl, N., & Satzger, G. (2019). How to cope with change?-preserving validity of predictive services over time. In Proceedings of the 52nd Hawaii International Conference on System Sciences.
- Cawley, G. C., & Talbot, N. L. (2010). On over-fitting in model selection and subsequent selection bias in performance evaluation. *The Journal of Machine Learning Research*, 11, 2079-2107.
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- Hemmer, P., Schemmer, M., Vössing, M., & Kühl, N. (2021). Human-AI Complementarity in Hybrid Intelligence Systems: A Structured Literature Review. *PACIS 2021 Proceedings*.
- Hirt, R., & Kühl, N. (2018). Cognition in the Era of Smart Service Systems: Inter-organizational Analytics through Meta and Transfer Learning. In 39th International Conference on Information Systems, ICIS 2018; San Francisco Marriott Marquis San Francisco; United States; 13 December 2018 through 16 December 2018.
- Holstein, J., Spitzer, P., Hoell, M., Vössing, M., & Kühl, N. (2024). Understanding Data Understanding: A Framework to Navigate the Intricacies of Data Analytics. In European Conference on Information Systems (ECIS 2024), Paphos, Cyprus, 13-19 June, 2024.
- 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, N., Hirt, R., Baier, L., Schmitz, B., & Satzger, G. (2021). How to Conduct Rigorous Supervised Machine Learning in Information Systems Research: The Supervised Machine Learning Report Card. *Communications of the Association for Information Systems*, 48(1), 46.
- Maleshkova, M., Kühl, N., & Jussen, P. (Eds.). (2020). *Smart Service Management: Design Guidelines and Best Practices*. Springer Nature.
- Martin, D., Hirt, R., & Kühl, N. (2019). Service Systems, Smart Service Systems and Cyber-Physical Systems—What's the difference? Towards a Unified Terminology. 14. Internationale Tagung Wirtschaftsinformatik 2019 (WI 2019), Siegen, Germany, February 24-27.
- Mehrabi, N., Morstatter, F., Saxena, N., Lerman, K., & Galstyan, A. (2019). A survey on bias and fairness in machine learning. arXiv preprint arXiv:1908.09635.
- Schemmer, M., Bartos, A., Spitzer, P., Hemmer, P., Kühl, N., Liebschner, J., & Satzger, G. (2023). Towards Effective Human-AI Decision-Making: The Role of Human Learning in Appropriate Reliance on AI Advice. In Proceedings of the 44th International Conference on Information Systems (ICIS2023), Hyderabad, India.
- Schöffler, J., Machowski, Y., & Kühl, N. (2021). A Study on Fairness and Trust Perceptions in Automated Decision Making. In Joint Proceedings of the ACM IUI 2021 Workshops, April 13–17, 2021, College Station, USA.
- Spitzer, P., Kühl, N., Goutier, M., Kaschura, M., & Satzger, G. (2024). Transferring Domain Knowledge with (X) AI-Based Learning Systems. In European Conference on Information Systems (ECIS 2024), Paphos, Cyprus, 13-19 June, 2024.
- Zahn, M. V., Feuerriegel, S., & Kühl, N. (2021). The cost of fairness in AI: Evidence from e-commerce. *Business & information systems engineering*.
-

T

## 7.25 Course: Artificial Intelligence in Service Systems - Applications in Computer Vision [T-WIWI-111219]

**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-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services](#)

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

Events					
ST 2024	2595501	<a href="#">Artificial Intelligence in Service Systems - Applications in Computer Vision</a>	3 SWS	Lecture / 🗣️	Satzger, Schmitz
Exams					
ST 2024	7900327	<a href="#">Artificial Intelligence in Service Systems - Applications in Computer Vision (Final Presentation July, 26)</a>			Satzger

Legend: 📺 Online, 🔄 Blended (On-Site/Online), 🗣️ On-Site, ✖ Canceled

### Competence Certificate

Alternative exam assessment.

### Annotation

This course is admission restricted (see <http://dsi.iism.kit.edu>).

The course replaces "Service Analytics A" as of summer semester 2021.

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

V

### Artificial Intelligence in Service Systems - Applications in Computer Vision

2595501, SS 2024, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
On-Site

## Content

---We renamed this course from "Service Analytics A" to "Artificial Intelligence in Service Systems - Applications in Computer Vision ---

## 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. For more information on recent projects as part of the course, please visit the website of our lecture: <https://www.aiss-cv.com>.

## Recommendations

The course is aimed at students in the Master's program with basic knowledge in statistics and applied programming in Python. Knowledge from the lecture Artificial Intelligence in Service Systems may be beneficial.

## Additional information

The lecture will be held as part of 7 blocks within the summer semester. Due to the practical group sessions in the course, the number of participants is limited. The official application period in the WiWi portal will open mid of February. Please apply here: <https://go.wiwi.kit.edu/aiss-cv>. The course will be held mainly online via Zoom. For interim and final presentation, we will meet in person. Further information on the dates and rooms of interim and final presentation will be announced via Ilias and mail.

## 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*.
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- 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



## 7.26 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-101482 - Finance 1](#)  
[M-WIWI-101502 - Economic Theory and its Application in Finance](#)  
[M-WIWI-106409 - Digital Financial Economics](#)

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

Events					
ST 2024	2530555	<a href="#">Asset Pricing</a>	2 SWS	Lecture / 	Uhrig-Homburg, Müller
ST 2024	2530556	<a href="#">Asset Pricing</a>	1 SWS	Practice / 	Böll, Uhrig-Homburg, Müller
Exams					
ST 2024	7900110	<a href="#">Asset Pricing</a>			Uhrig-Homburg, Thimme
WT 24/25	7900056	<a href="#">Asset Pricing</a>			Uhrig-Homburg

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

**Competence Certificate**

Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination or as an open-book examination (alternative exam assessment).

A bonus can be earned by correctly solving at least 50% of the posed bonus 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**

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**

2530556, SS 2024, 1 SWS, Language: German, [Open in study portal](#)

**Practice (Ü)  
On-Site**

## T

**7.27 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](#)  
[M-WIWI-106408 - Digital Economics](#)

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

Events					
WT 24/25	2520408	<a href="#">Auction Theory</a>	2 SWS	Lecture	Ehrhart
WT 24/25	2520409	<a href="#">Auction Theory Exercise</a>	1 SWS	Practice	Ehrhart
Exams					
ST 2024	7900255	<a href="#">Auction Theory</a>			Ehrhart
WT 24/25	7900028	<a href="#">Auction Theory</a>			Ehrhart

**Competence Certificate**

The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.

The exam is offered each semester.

**Prerequisites**

None

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

## V

**Auction Theory**

2520408, WS 24/25, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**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


## 7.28 Course: Basics of German Company Tax Law and Tax Planning [T-WIWI-108711]





**Responsible:** Dr. 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	2

Events					
WT 24/25	2560134	<a href="#">Basics of German Company Tax Law and Tax Planning</a>	3 SWS	Lecture / 	Wigger, Gutekunst
Exams					
ST 2024	790unbe	<a href="#">Basics of German Company Tax Law and Tax Planning</a>			Wigger
WT 24/25	790unbe	<a href="#">Basics of German Company Tax Law and Tax Planning</a>			Wigger

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

### Competence Certificate

Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1.5 h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

### Prerequisites

None

### Recommendation

Knowledge of the collection of public revenues is assumed. Therefore it is recommended to attend the course "Öffentliche Einnahmen" beforehand.

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

V

### Basics of German Company Tax Law and Tax Planning

2560134, WS 24/25, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
On-Site

### Content

#### Workload:

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

T

**7.29 Course: Bayesian Statistics for Analyzing Data [T-WIWI-113471]**

**Responsible:** Prof. Dr. Benjamin Scheibehenne  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-105714 - Consumer Research](#)

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

Events					
ST 2024	2500281	<a href="#">Bayesian Statistics for Analyzing Data</a>	3 SWS	Lecture / 🎧	Scheibehenne
Exams					
ST 2024	7900359	<a href="#">Bayesian Statistics for Analyzing Data</a>			Scheibehenne

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

**Competence Certificate**

Alternative exam assessment (assignments and active participation). Details will be communicated at the first day of class.

**Annotation**

Participation is limited to 10 participants. Registration is required for the course. If too many students register, students in higher semesters are selected first.

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

V

**Bayesian Statistics for Analyzing Data**

2500281, SS 2024, 3 SWS, Language: English, [Open in study portal](#)

**Lecture (V)  
On-Site**

**Content**

Registration for this class is exclusively managed through the WiWi Portal (search for the title of the class: "Bayesian Statistics for Analyzing Data - 2500281")

**Organizational issues**

Participation is limited to 10 participants. Registration is required for the course. Registration for this class is exclusively managed through the WiWi Portal (search for the title of the class: "Bayesian Statistics for Analyzing Data - 2500281"). If too many students register, students in higher semesters are selected first.



T


**7.30 Course: Behavioral Lab Exercise [T-WIWI-113095]**

**Responsible:** Prof. Dr. Petra Nieken  
Prof. Dr. Benjamin Scheibehenne

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

**Part of:** [M-WIWI-105714 - Consumer Research](#)

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

Events					
WT 24/25	2500040	<a href="#">Behavioral Lab Exercise</a>	4.5 SWS	Seminar / 	Scheibehenne, Nieken
Exams					
WT 24/25	7900368	<a href="#">Behavioral Lab Exercise</a>			Nieken, Scheibehenne

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

**Competence Certificate**

Alternative exam assessment (presentation during the semester). Details will be communicated at the first day of class.

**Annotation**

In this class, students learn the core principles of psychological and economic experiments. The course covers topics ranging from design principles, to best-practices, preregistration, and analysis of the experimental data. Students will actively participate in the course by covering one selected topic in a talk. All students will discuss the topics together with the professors to develop solid knowledge about experimental design and analysis plans. In a second step, all students will develop a draft of an experimental design and analysis plan for their own topic and present it to the class. The students will get detailed feedback, enabling them to improve their drafts for future research.

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

V

**Behavioral Lab Exercise**

2500040, WS 24/25, 4.5 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

**Content**

In this class, students learn the core principles of psychological and economic experiments. The course covers topics ranging from design principles, to best-practices, preregistration, and analysis of the experimental data. Students will actively participate in the course by covering one selected topic in a talk. All students will discuss the topics together with the professors to develop solid knowledge about experimental design and analysis plans. In a second step, all students will develop a draft of an experimental design and analysis plan for their own topic and present it to the class. The students will get detailed feedback enabling them to improve their drafts for future research.

T


**7.31 Course: Behavioral Lab Exercise [T-WIWI-111806]**





**Responsible:** Prof. Dr. Petra Nieken  
Prof. Dr. Benjamin Scheibehenne

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

**Part of:** [M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations](#)

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

Events					
WT 24/25	2500040	<a href="#">Behavioral Lab Exercise</a>	4.5 SWS	Seminar / 	Scheibehenne, Nieken
Exams					
WT 24/25	7900368	<a href="#">Behavioral Lab Exercise</a>			Nieken, Scheibehenne

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

**Competence Certificate**

Alternative exam assessment.

**Recommendation**

This class caters towards Master students who are interested in empirical research and in running lab experiments.

**Annotation**

The course will be offered for the first time in the winter semester 21/22.

Due to the interactive nature of the class, the number of participants is limited. If you are interested, please contact the teachers directly via email.

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

V

**Behavioral Lab Exercise**

2500040, WS 24/25, 4.5 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

**Content**

In this class, students learn the core principles of psychological and economic experiments. The course covers topics ranging from design principles, to best-practices, preregistration, and analysis of the experimental data. Students will actively participate in the course by covering one selected topic in a talk. All students will discuss the topics together with the professors to develop solid knowledge about experimental design and analysis plans. In a second step, all students will develop a draft of an experimental design and analysis plan for their own topic and present it to the class. The students will get detailed feedback enabling them to improve their drafts for future research.

## T 7.32 Course: Bond Markets [T-WIWI-110995]

**Responsible:** Prof. Dr. Marliese Uhrig-Homburg  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-106409 - Digital Financial Economics](#)

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

Events					
WT 24/25	2530560	<a href="#">Bond Markets</a>	3 SWS	Lecture / Practice ( / )	Uhrig-Homburg, Molnar
Exams					
ST 2024	7900280	<a href="#">Bond Markets</a>			Uhrig-Homburg
WT 24/25	7900311	<a href="#">Bond Markets</a>			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 by correctly solving at least 50% of the posed bonus exercises. 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.

Depending on further pandemic developments, the examination will be offered as an open-book examination (alternative exam assessment).

### Annotation

This course will be held in English.

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

V

### Bond Markets

2530560, WS 24/25, 3 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)  
On-Site

### 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 by correctly solving at least 50% of the posed bonus exercises. 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

Die Veranstaltung wird freitags in der ersten Semesterhälfte am Campus B (Geb. 09.21) im Raum 124 angeboten. Die Klausur findet am 08.01.25 statt.

T

**7.33 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](#)

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

Events					
ST 2024	2540466	<a href="#">Business Data Analytics: Application and Tools</a>	2 SWS	Lecture / 🗣️	Knierim, Hariharan
ST 2024	2540467	<a href="#">Excercise Business Data Analytics: Application and Tools</a>	1 SWS	Practice / 🗣️	Grote
Exams					
ST 2024	7900183	<a href="#">Business Data Analytics: Application and Tools</a>			Weinhardt
ST 2024	7900189	<a href="#">Business Data Analytics: Application and Tools</a>			Weinhardt

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

**Competence Certificate**

Success is monitored through ongoing elaborations and presentations of tasks and a written exam (60 minutes) at the end of the lecture period. Successful participation in the exercises is a prerequisite for admission to the written examination. The scoring scheme for the overall evaluation will be announced at the beginning of the course.

The number of participants is limited to 50, as this is the only way to ensure conscientious support for the case study. The selection of participants is based on a short letter of motivation (max. 2000 characters including spaces) in the faculty's portal.

**Prerequisites**

None

**Recommendation**

Knowledge of (object-oriented) programming and statistics is helpful.

**Annotation**

The lecture is read in block sessions at the beginning of the semester. The dates will be communicated in the Wiwi-Portal.

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

V

**Business Data Analytics: Application and Tools**

2540466, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
On-Site**

**Organizational issues**

als Blockveranstaltung an 3 Terminen:

- Montag, 22.04.24 - 08:00 - 17:00 Uhr,
- Dienstag, 23.04.24 - 08:00 - 17:00 Uhr,
- Mittwoch, 24.04.24 - 08:00 - 17:00 Uhr,

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

Events					
WT 24/25	2540484	<a href="#">Business Data Strategy</a>	2 SWS	Lecture /	Weinhardt, Hariharan
WT 24/25	2540485	<a href="#">Übung zu Business Data Strategy</a>	1 SWS	Practice /	Weinhardt, Schulz
Exams					
ST 2024	7900267	<a href="#">Business data strategy</a>			Weinhardt

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

**Competence Certificate**

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation 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:*

**Business Data Strategy**

2540484, WS 24/25, 2 SWS, Language: German/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/8327>

**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/8327>

T

**7.35 Course: Business Dynamics [T-WIWI-102762]**

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

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

**Part of:** [M-WIWI-101409 - Electronic Markets](#)  
[M-WIWI-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services](#)

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

Events					
WT 24/25	2540531	<a href="#">Business Dynamics</a>	2 SWS	Lecture / 🗣️	Geyer-Schulz, Glenn
WT 24/25	2540532	<a href="#">Exercise Business Dynamics</a>	1 SWS	Practice / 🗣️	Geyer-Schulz, Glenn
Exams					
ST 2024	7900065	<a href="#">Business Dynamics (Nachklausur WS 2023/2024)</a>			Geyer-Schulz
WT 24/25	7979777	<a href="#">Business Dynamics (WS 2024/2025)</a>			Geyer-Schulz

Legend: 🖥️ Online, 🔄 Blended (On-Site/Online), 🗣️ On-Site, ✖ Canceled

**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 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**Organizational issues**

Termine und Raum für die VL + Ü Business Dynamics (2540532):

Sa (26.10.2024), 09:00 bis 19:00, Geb. 05.20, Raum 1C-01

Sa (23.11.2024), 09:00 bis 19:00, Geb. 05.20, Raum 1C-01

Sa (25.01.2025), 09:00 bis 19:00, Geb. 05.20, Raum 1C-01

Sa (15.02.2025), 09:00 bis 19:00, Geb. 05.20, Raum 1C-01

**Literature**


John D. Sterman. Business Dynamics: Systems Thinking and Modeling for a Complex World. McGraw-Hill, 2000.





T

**7.36 Course: Business Intelligence Systems [T-WIWI-105777]**

**Responsible:** Prof. Dr. Alexander Mädche  
**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](#)

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

Events					
WT 24/25	2540422	<a href="#">Business Intelligence Systems</a>	3 SWS	Lecture / 	Mädche
Exams					
ST 2024	7900149	<a href="#">Business Intelligence Systems</a>			Mädche
WT 24/25	7900224	<a href="#">Business Intelligence Systems</a>			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 24/25, 3 SWS, Language: English, [Open in study portal](#)

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

### Content

In most modern enterprises, Business Intelligence & Analytics (BI&A) Systems represent a core enabler of decision-making in that they supply 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. This course aims to introduce theoretical foundations, concepts, tools, and current practice of BI&A Systems from a managerial and technical perspective.

The course is complemented by an engineering capstone project, in which students work in a team using real-world use cases and data to create running Business intelligence and 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 50 places. The capacity limitation is due to the attractive format of the accompanying engineering capstone project. Strong analytical abilities and profound skills in SQL, Python, and/or R are required. Students have to apply with their CV and transcript of records via the WiWi-Portal. The first lecture will present all organizational details, the underlying registration process of the lecture, and the capstone project. The teaching language is English.

Die Erfolgskontrolle erfolgt in Form einer Prüfungsleistung anderer Art (Form) nach § 4 Abs. 2 Nr. 3 SPO. Die Leistungskontrolle erfolgt in Form einer einstündigen Klausur und durch Durchführung eines Capstone Projektes. Details zur Ausgestaltung der Erfolgskontrolle werden im Rahmen der Vorlesung bekannt gegeben.

### 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

**7.37 Course: Business Planning [T-WIWI-102865]**

**Responsible:** Prof. Dr. Orestis Terzidis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Irregular	1

Events					
ST 2024	2545109	<a href="#">Business Planning for Founders</a>	2 SWS	Seminar /	Terzidis, Tittel, Rosales Bravo
WT 24/25	2500109	<a href="#">Business Planning for Founders - Startup CFO</a>	2 SWS	Seminar /	Terzidis, Tittel, Rosales Bravo
Exams					
ST 2024	7900234	<a href="#">Business Planning for Founders</a>			Terzidis
WT 24/25	7900023	<a href="#">Business Planning for Founders</a>			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**

2545109, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

## Content

Embark on a transformative journey into the dynamic realm of startup finance with our comprehensive course designed for Master's students interested in the task of aspiring to become future Chief Financial Officers (CFOs) or Chief Executive Officers (CEOs) in the startup. Particularly, students who previously attended classes on entrepreneurship or developed their business ideas in Design Thinking Seminars will work on the financial viability and, therefore, the potential for realizing their business ideas. The three-day seminar develops the financial literacy needed to start and operate an entrepreneurial venture, including analyzing and determining the cost and revenue structure of the firm and creating a financial strategy to execute the business plan successfully. Additionally, students will learn about the sources and conditions of different investment types and develop tailored fundraising strategies. The seminar is not restricted to the financial aspects but follows the Triple Bottom Line philosophy (3BL).

Throughout the course, real-world case studies and guest lectures, professional experts will provide valuable insights into the practical application of financial concepts. By the end of this course, you will be well-equipped to take on leadership roles in startups and startup ecosystems, armed with the managerial understanding required to drive success in dynamic and competitive markets.

### Learning Objectives

Upon completion of this seminar, course participants will be able to

1. Analyze, forecast, and plan the cost structure and revenue streams of the venture project.
2. Reflect on the sustainability of a business based on the Triple Bottom Line theory.
3. Develop the essential financial statements for a startup.
4. Recall and reflect on investment strategies for startups.
5. Discover business stakeholders and prepare a tailored communication strategy.
6. Reflect on the role of information technology.
7. Apply negotiation techniques essential for securing favorable terms and agreements.
8. Have a brief overview of the related topic.

### Credentials:

ONLY ONE of the two options - Business Planning for founders OR Business Planning for founders in the field of IT-Security - can be taken and credited under the in CAS mentioned partial credit, as they cover similar content. Registration must take place in the CAS for the respective examination.

### Organizational issues

Wednesday, 05.06.2024

Wednesday, 19.06.2024

Wednesday, 17.07.2024

Registration is via the Wiwi-Portal.

In the seminar you will work on a project in teams of max. 5 persons. Team applications are welcome but not a prerequisite for participation. The seminars will be held in English.



### Business Planning for Founders - Startup CFO

2500109, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

**Content**  
**Content**

Embark on a transformative journey into the dynamic realm of startup finance with our comprehensive course designed for Master's students interested in the task of aspiring to become future Chief Financial Officers (CFOs) or Chief Executive Officers (CEOs) in the startup. Particularly, students who previously attended classes on entrepreneurship or developed their business ideas in Design Thinking Seminars will work on the financial viability and, therefore, the potential for realizing their business ideas. The three-day seminar develops the financial literacy needed to start and operate an entrepreneurial venture, including analyzing and determining the cost and revenue structure of the firm and creating a financial strategy to execute the business plan successfully. Additionally, students will learn about the sources and conditions of different investment types and develop tailored fundraising strategies. The seminar is not restricted to the financial aspects but follows the Triple Bottom Line philosophy (3BL).

Throughout the course, real-world case studies and guest lectures, professional experts will provide valuable insights into the practical application of financial concepts. By the end of this course, you will be well-equipped to take on leadership roles in startups and startup ecosystems, armed with the managerial understanding required to drive success in dynamic and competitive markets.

**Learning Objectives**

Upon completion of this seminar, course participants will be able to

1. Analyze, forecast, and plan the cost structure and revenue streams of the venture project.
2. Reflect on the sustainability of a business based on the Triple Bottom Line theory.
3. Develop the essential financial statements for a startup.
4. Recall and reflect on investment strategies for startups.
5. Discover business stakeholders and prepare a tailored communication strategy.
6. Reflect on the role of information technology.
7. Apply negotiation techniques essential for securing favorable terms and agreements.
8. Have a brief overview of the related topic.

**Credentials:**

ONLY ONE of the two options - Business Planning for founders OR Business Planning for founders in the field of IT-Security - can be taken and credited under the in CAS mentioned partial credit, as they cover similar content. Registration must take place in the CAS for the respective examination.

**Organizational issues**

Registration is via the Wiwi-Portal.

In the seminar you will work on a project in teams of max. 5 persons. Team applications are welcome but not a prerequisite for participation. The seminars will be held in English.

**7.38 Course: Business Process Modelling [T-WIWI-102697]**

**Responsible:** Prof. Dr. Andreas Oberweis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Events					
WT 24/25	2511210	<a href="#">Business Process Modelling</a>	2 SWS	Lecture /	Oberweis
WT 24/25	2511211	<a href="#">Exercise Business Process Modelling</a>	1 SWS	Practice /	Oberweis, Schüler
Exams					
ST 2024	79AIFB_MvG_B4	<a href="#">Business Process Modelling (Registration until 15 July 2024)</a>			Oberweis
WT 24/25	79AIFB_MvG_C2	<a href="#">Business Process Modelling</a>			Oberweis

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

**Competence Certificate**

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

**Prerequisites**

None

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

**Business Process Modelling**

2511210, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
On-Site**

**Content**

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

**Learning objectives:**

Students

- describe goals of business process modeling and apply different modeling languages,
- choose the appropriate modeling language according to a given context,
- use suitable tools for modeling business processes,
- apply methods for analysing and assessing process models to evaluate specific quality characteristics of the process model.

**Recommendations:**

Knowledge of course Applied Informatics I - Modelling is expected.

**Workload:**

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

**Literature**

- M. Weske: Business Process Management: Concepts, Languages, Architectures. Springer 2012.
- F. Schönthaler, G.Vossen, A. Oberweis, T. Karl: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer 2012.

Weitere Literatur wird in der Vorlesung bekannt gegeben.





T

**7.39 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	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each winter term	1

Events					
WT 24/25	2545105	<a href="#">Case studies seminar: Innovation management</a>	2 SWS	Seminar / 	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 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)  
On-Site**

**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 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.

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

Events					
ST 2024	2550494	<a href="#">Challenges in Supply Chain Management</a>	3 SWS	Lecture /	Mohr
Exams					
ST 2024	00030	<a href="#">Challenges in Supply Chain Management</a>			Nickel

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

**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:*

**Challenges in Supply Chain Management**

2550494, SS 2024, 3 SWS, Language: German, [Open in study portal](#)

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

**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**

Bewerbung über das Wiwi-Portal möglich:

<http://go.wiwi.kit.edu/ChallengesSCM>

(Bewerbungszeitraum: 01.03.2024 - 18.03.2024)

**Literature**

Wird in Abhängigkeit vom Thema in den Projektteams bekanntgegeben.

## T

## 7.41 Course: Collective Perception in Autonomous Driving [T-WIWI-113363]

**Responsible:** Prof. Dr. Alexey Vinel  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Events					
ST 2024	2511456	<a href="#">Collective Perception in Autonomous Driving</a>	2 SWS	Lecture / 🔄	Bied, Zhao , Vinel
ST 2024	2511457	<a href="#">Exercise Collective Perception in Autonomous Driving</a>	1 SWS	Practice / 🔄	Bied, Zhao , Lucena
Exams					
ST 2024	79AIFB_CPAD_C3	<a href="#">Collective Perception in Autonomous Driving (Registration until 15 July 2024)</a>			Vinel
WT 24/25	79AIFB_CPAD_B3	<a href="#">Collective Perception in Autonomous Driving</a>			Vinel

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

**Competence Certificate**

The default assessment of this course is a written examination (60 min).

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

**Prerequisites**

None.



## T

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

Events					
WT 24/25	2561204	<a href="#">Competition in Networks</a>	2 SWS	Lecture / 🔄	Mitusch
WT 24/25	2561205	<a href="#">Übung zu Wettbewerb in Netzen</a>	1 SWS	Practice / 🔄	Wisotzky, Mitusch, Corbo
Exams					
ST 2024	7900274	<a href="#">Competition in Networks</a>			Mitusch

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

**Competence Certificate**

Result of success is made by a 60 minutes written examination during the semester break (according to §4(2), 1 ERSC). Examination is offered every semester and can be retried at any regular examination date.

**Prerequisites**

None.

**Recommendation**

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

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

## V

**Competition in Networks**

2561204, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

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

**Content**

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

**Literature**

Literatur und Skripte werden in der Veranstaltung angegeben.

## T

## 7.43 Course: Computational Economics [T-WIWI-102680]

**Responsible:** Prof. Dr. Pradyumn Kumar Shukla  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	see Annotations	3

Events					
WT 24/25	2590458	<a href="#">Computational Economics</a>	2 SWS	Lecture / 🌀	Shukla
WT 24/25	2590459	<a href="#">Exercices to Computational Economics</a>	1 SWS	Practice / 🌀	Shukla
Exams					
ST 2024	79AIFB_CE_C6	<a href="#">Computational Economics (Registration until 15 July 2024)</a>			Shukla
WT 24/25	79AIFB_CE_B1	<a href="#">Computational Economics</a>			Shukla

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

**Competence Certificate**

**Please note: the lecture will not take place in the winter semester 2023/2024. Also an exam cannot be offered.**

**Prerequisites**

None

**Annotation**

The lecture is currently suspended. An exam cannot be offered.

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

## V

**Computational Economics**

2590458, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

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

**Content**

Examining complex economic problems with classic analytical methods usually requires making numerous simplifying assumptions, for example that agents behave rationally or homogeneously. Recently, widespread availability of computing power gave rise to a new field in economic research that allows the modeling of heterogeneity and forms of bounded rationality: Computational Economics. Within this new discipline, computer based simulation models are used for analyzing complex economic systems. In short, an artificial world is created which captures all relevant aspects of the problem under consideration. Given all exogenous and endogenous factors, the modelled economy evolves over time and different scenarios can be analyzed. Thus, the model can serve as a virtual testbed for hypothesis verification and falsification.

**Learning objectives:**

The student

- understands the methods of Computational Economics and applies them on practical issues,
- evaluates agent models considering bounded rational behaviour and learning algorithms,
- analyses agent models based on mathematical basics,
- knows the benefits and disadvantages of the different models and how to use them,
- examines and argues the results of a simulation with adequate statistical methods,
- is able to support the chosen solutions with arguments and can explain them.

**Literature**

- R. Axelrod: "Advancing the art of simulation in social sciences". R. Conte u.a., Simulating Social Phenomena, Springer, S. 21-40, 1997.
- R. Axtel: "Why agents? On the varied motivations for agent computing in the social sciences". CSED Working Paper No. 17, The Brookings Institution, 2000.
- K. Judd: "Numerical Methods in Economics". MIT Press, 1998, Kapitel 6-7.
- A. M. Law and W. D. Kelton: "Simulation Modeling and Analysis", McGraw-Hill, 2000.
- R. Sargent: "Simulation model verification and validation". Winter Simulation Conference, 1991.
- L. Tesfation: "Notes on Learning", Technical Report, 2004.
- L. Tesfatsion: "Agent-based computational economics". ISU Technical Report, 2003.

**Weiterführende Literatur:**




- Amman, H., Kendrick, D., Rust, J.: "Handbook of Computational Economics". Volume 1, Elsevier North-Holland, 1996.
- Tesfatsion, L., Judd, K.L.: "Handbook of Computational Economics". Volume 2: Agent-Based Computational Economics, Elsevier North-Holland, 2006.
- Marimon, R., Scott, A.: "Computational Methods for the Study of Dynamic Economies". Oxford University Press, 1999.
- Gilbert, N., Troitzsch, K.: "Simulation for the Social Scientist". Open University Press, 1999.





T

## 7.44 Course: Computer Aided Data Analysis [T-GEISTSOZ-104565]

**Responsible:** Prof. Dr. Gerd Nollmann  
**Organisation:** KIT Department of Humanities and Social Sciences  
**Part of:** [M-GEISTSOZ-101169 - Sociology](#)

Type	Credits	Grading scale	Version
Completed coursework	0	pass/fail	1

Events					
ST 2024	5011018	<a href="#">Computational Social Science: Topics and positions in the German Parliament (Part 2)</a>	2 SWS	Seminar / 	Banisch
WT 24/25	5000058	<a href="#">Decompositions and regression methods</a>	2 SWS	Course ( /  )	Nollmann
WT 24/25	5000059	<a href="#">The gender wage gap</a>	2 SWS	Course ( /  )	Nollmann
Exams					
ST 2024	7400369	<a href="#">Computer Aided Data Analysis</a>			Nollmann

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

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

V

### Computational Social Science: Topics and positions in the German Parliament (Part 2)

5011018, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)  
Blended (On-Site/Online)

#### Content

The course consists of two parts (5011018 and 5011002) that are ideally taken in parallel.

#### Organizational issues

The course consists of two parts (5011018 and 5011002) that are ideally taken in parallel.

T

**7.45 Course: Computer Contract Law [T-INFO-102036]**

**Responsible:** Michael Menk  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101216 - Private Business Law](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each winter term	2

Events					
WT 24/25	2411604	<a href="#">Computer Contract Law</a>	2 SWS	Lecture / 🎧	Menk
Exams					
ST 2024	7500066	<a href="#">Computer Contract Law</a>			Sattler
WT 24/25	7500065	<a href="#">Computer Contract Law</a>			Sattler, Matz

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

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-INFO-101316 - Law of Contracts](#) must not have been started.

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

V

**Computer Contract Law**

2411604, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**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.

**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

**7.46 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	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 successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

**Prerequisites**

None

**Recommendation**

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](http://www.ior.kit.edu)).

## T



## 7.47 Course: Conveying Technology and Logistics [T-MACH-102135]





**Responsible:** Prof. Dr.-Ing. Kai Furmans  
Paolo Pagani

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each summer term	1

Events					
ST 2024	2119100	<a href="#">Fördertechnik und Logistiksysteme</a>		Seminar / 	Furmans
WT 24/25	2119100	<a href="#">Fördertechnik und Logistiksysteme</a>		Seminar / 	Furmans
Exams					
ST 2024	76-T-MACH-102135	<a href="#">Conveying Technology and Logistics</a>			Furmans

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

### Competence Certificate

alternative test achievement (graded):

- written elaboration (workload of at least 80 h)
- oral presentation (approx. 30 min)

### Prerequisites

none

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

## V

### Fördertechnik und Logistiksysteme

2119100, SS 2024, SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

### Content

The goal of the seminar is to deal with different topics related to the materials handling and logistics. Depending on the topic, the students can work on the either alone or in a group. At the end the results are presented and discussed with a final presentation. To prepare the work for the seminar an introductory event is scheduled at the beginning.

### Organizational issues

Ort: Gebäude 50.38, Raum 0.22, Termine siehe homepage

## V

### Fördertechnik und Logistiksysteme

2119100, WS 24/25, SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

### Content

The goal of the seminar is to deal with different topics related to the materials handling and logistics. Depending on the topic, the students can work on the either alone or in a group. At the end the results are presented and discussed with a final presentation. To prepare the work for the seminar an introductory event is scheduled at the beginning.

### Organizational issues

Weiteres siehe Homepage

## T

## 7.48 Course: Cooperative Autonomous Vehicles [T-WIWI-112690]

**Responsible:** Prof. Dr. Alexey Vinel  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Events					
ST 2024	2511450	<a href="#">Cooperative Autonomous Vehicles</a>	2 SWS	Lecture / 🔄	Vinel
ST 2024	2511451	<a href="#">Exercise Cooperative Autonomous Vehicles</a>	1 SWS	Practice / 🔄	Vinel
Exams					
ST 2024	79AIFB_CAV_B5	<a href="#">Cooperative Autonomous Vehicles (Registration until 15 July 2024)</a>			Vinel
WT 24/25	79AIFB_CAV_A3	<a href="#">Cooperative Autonomous Vehicles</a>			Vinel

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

**Competence Certificate**

The default assessment of this course is a written examination (60 min).

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

**Prerequisites**


None.







## T 7.49 Course: Copyright [T-INFO-101308]

**Responsible:** N.N.  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101215 - Intellectual Property Law](#)

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

Events					
WT 24/25	24121	<a href="#">Copyright</a>	2 SWS	Lecture / 	Sattler
Exams					
ST 2024	7500064	<a href="#">Copyright</a>			Sattler
WT 24/25	7500064	<a href="#">Copyright</a>			Sattler

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

### Competence Certificate

The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 60 minutes.

### Prerequisites

None.

### Recommendation


None.





T

## 7.50 Course: Corporate Compliance [T-INFO-101288]

**Responsible:** Andreas Herzig  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101216 - Private Business Law](#)

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

Events					
WT 24/25	2400087	<a href="#">Corporate Compliance</a>	2 SWS	Lecture / 	Herzig, Siddiq
Exams					
ST 2024	7500063	<a href="#">Corporate Compliance</a>			Sattler
WT 24/25	7500063	<a href="#">Corporate Compliance</a>			Sattler, Matz

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

T

**7.51 Course: Corporate Risk Management [T-WIWI-109050]**

**Responsible:** Prof. Dr. Martin Ruckes  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101502 - Economic Theory and its Application in Finance](#)

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

**Competence Certificate**

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. 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.

Please note that the exam is only offered in the semester of the lecture as well as in the following semester.

**Prerequisites**

None

**Recommendation**

None

**Annotation**

The course will be held again in the summer term 2023 at the earliest. Please pay attention to the announcements on our website.

T

**7.52 Course: Critical Information Infrastructures [T-WIWI-109248]**

**Responsible:** Prof. Dr. Ali Sunyaev  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

**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.

T

## 7.53 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-105714 - Consumer Research](#)

**Type**  
Examination of another type

**Credits**  
4,5

**Grading scale**  
Grade to a third

**Recurrence**  
Each term

**Expansion**  
1 terms

**Version**  
2

Events					
ST 2024	2540441	<a href="#">Current Directions in Consumer Psychology</a>	2 SWS	Others (sons / 🎧)	Scheibehenne, Liu
WT 24/25	2540441	<a href="#">Current Directions in Consumer Psychology</a>	2 SWS	Others (sons / 🔄)	Scheibehenne
Exams					
ST 2024	7900358	<a href="#">Current Directions in Consumer Psychology</a>	Scheibehenne		

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

### Competence Certificate

Alternative exam assessment. Grading will be based on a continuous basis throughout the semester.

### Prerequisites

Strong interest in research. Students who wish to write a master's thesis at our department will be given priority in the allocation of places.

### Annotation

This class covers current research topics at the intersection between Psychology, Consumer Behavior, and Behavioral Economics. Based on weekly reading assignments of current scientific journal publications, students will get a first-hand experience of the ongoing topics and discussions at this exciting and dynamic area of research. The reading list will be announced at the first day of class and will be updated throughout the semester. Grades will be based on weekly participation throughout the semester including short oral presentation of papers in class, active engagement in discussions, and homework assignments. Due to the highly interactive format of this class the number of participants is limited.

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

V

### Current Directions in Consumer Psychology

2540441, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

Others (sonst.)  
On-Site

### Content

NOTE: Wiwi-portal sign-up is required for joining this event. On-site presence in meetings mandatory.

This class covers current research topics at the intersection between Psychology, Consumer Behavior, and Behavioral Economics. Based on weekly reading assignments of current scientific journal publications, students will get a first-hand experience of the ongoing topics and discussions at this exciting and dynamic area of research. The reading list will be announced at the first day of class. Grades will be based on continuous participation throughout the semester including short oral presentation of papers in class, active engagement in discussions and homework assignments. This class will be taught in English.

### Organizational issues

Wiwi-portal sign-up is required for joining this event. On-site presence in meetings mandatory.

V

### Current Directions in Consumer Psychology

2540441, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

Others (sonst.)  
Blended (On-Site/Online)

**Content****NOTE: sign-up required via the WIWI Portal**

This class covers current research topics at the intersection between Psychology, Consumer Behavior, and Behavioral Economics. Based on weekly reading assignments of current scientific journal publications, students will get a first-hand experience of the ongoing topics and discussions at this exciting and dynamic area of research. The reading list will be announced at the first day of class. Grades will be based on continuous participation throughout the semester including short oral presentation of papers in class, active engagement in discussions and homework assignments. This class will be taught in English.

**Organizational issues**

Participation is restricted to 6 participants. **Please sign up via the WIWI Portal!**

## T

## 7.54 Course: Database Systems and XML [T-WIWI-102661]

**Responsible:** Prof. Dr. Andreas Oberweis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)  
[M-WIWI-105880 - Informatics & Machine Learning](#)

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

Events					
WT 24/25	2511202	<a href="#">Database Systems and XML</a>	2 SWS	Lecture / 🌀	Oberweis
WT 24/25	2511203	<a href="#">Exercises Database Systems and XML</a>	1 SWS	Practice / 🎧	Oberweis, Fritsch
Exams					
ST 2024	79AIFB_DBX_A3	<a href="#">Database Systems and XML (Registration until 15 July 2024)</a>	Oberweis		
WT 24/25	79AIFB_DBX_A4	<a href="#">Database Systems and XML</a>	Oberweis		

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

### Competence Certificate

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

### Prerequisites

None

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

## V

### Database Systems and XML

2511202, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Blended (On-Site/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.

### Note on the event format:

The course Database Systems and XML will be held in WS 23/24 in a "Flipped Classroom" format. Videos and supporting materials are provided for the lecture content, which students can work through independently and at their own pace. During the semester, interactive classroom sessions are held at regular intervals to practice and reinforce the lecture content.

### 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

**7.55 Course: Demand-Driven Supply Chain Planning [T-WIWI-110971]**

**Responsible:** Dr. Iris Heckmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-102805 - Service Operations](#)

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

Events					
WT 24/25	2550510	<a href="#">Demand-Driven Supply Chain Planning</a>		Lecture / 	Packowski
Exams					
WT 24/25	7900031	<a href="#">Demand-Driven Supply Chain Planning</a>			Packowski

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

**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 7.56 Course: Derivatives [T-WIWI-102643]

**Responsible:** Prof. Dr. Marliese Uhrig-Homburg  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101482 - Finance 1](#)  
[M-WIWI-106409 - Digital Financial Economics](#)

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

Events					
ST 2024	2530550	<a href="#">Derivatives</a>	2 SWS	Lecture / 🗎	Uhrig-Homburg
ST 2024	2530551	<a href="#">Übung zu Derivate</a>	1 SWS	Practice / 🗎	Dinger, Uhrig-Homburg
Exams					
ST 2024	7900111	<a href="#">Derivatives</a>			Uhrig-Homburg
WT 24/25	7900051	<a href="#">Derivatives</a>			Uhrig-Homburg

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

### Competence Certificate

Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination or as an open-book examination (alternative exam assessment).

A bonus can be earned by correctly solving at least 50% of the posed bonus exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

### Prerequisites

None

### Recommendation

None

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

**V Derivatives**  
 2530550, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
 On-Site**

### Literature

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

### Weiterführende Literatur:

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

## T 7.57 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-101507 - Innovation Management](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Irregular	1

Events					
ST 2024	2545008	<a href="#">Design Thinking (Track 1)</a>	2 SWS	Seminar / 🎤	Bhargava, Jochem, Terzidis
WT 24/25	2545008	<a href="#">Design Thinking (Track 1)</a>	2 SWS	Seminar / 🎤	Terzidis
Exams					
ST 2024	7900053	<a href="#">Design Thinking (Track 1)</a>			Terzidis
WT 24/25	7900084	<a href="#">Design Thinking (Track 1)</a>			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, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**

### Content

#### 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 Objectives

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:

ATTENTION: Creditability in the seminar module: The seminar is NOT credited in the seminar module! Crediting is only possible in the EXPERT MODULE ENTREPRENEURSHIP.

#### Organizational issues

Registration is via the Wiwi-Portal.

**V Design Thinking (Track 1)**  
 2545008, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
Blended (On-Site/Online)**

**Content****Course 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 Objectives**

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.

**Organizational issues**

Registration is via the Wiwi portal.

In the seminar you will work on a project in teams of 4-5 persons. The groups are formed in the seminar

T

**7.58 Course: Design Thinking in Practice [T-WIWI-113664]**

**Responsible:** Jennifer Scheydt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101507 - Innovation Management](#)  
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each summer term	1

**Competence Certificate**

Non exam assessment consisting of a presentation of the results and a seminar paper (written in the group).  
 The grade is composed of 70% of the grade for the written work and 30% of the grade for the presentation.

**Prerequisites**

None

**Recommendation**


Prior attendance of the course Innovation Management is recommended.





T

## 7.59 Course: Designing Interactive Systems: Human-AI Interaction [T-WIWI-113465]

**Responsible:** 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-105923 - Incentives, Interactivity & Decisions in Organizations](#)  
[M-WIWI-106410 - Economics & Management](#)  
[M-WIWI-106413 - Digitalization & Society](#)

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

Events					
ST 2024	2540558	<a href="#">Designing Interactive Systems: Human-AI Interaction</a>	3 SWS	Lecture / 	Mädche, Seitz
Exams					
ST 2024	7900299	<a href="#">Designing Interactive Systems: Human-AI Interaction</a>			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.

### Annotation

The course is held in english.

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

V

## Designing Interactive Systems: Human-AI Interaction

2540558, SS 2024, 3 SWS, Language: English, [Open in study portal](#)

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

### Content

#### Description

Computers have evolved from batch processors towards highly interactive systems. With the rapid progress in the field of artificial intelligence, computers can now learn and adapt to their environment, simulate human intelligence processes as well as support or even take over tasks from humans. This offers great possibilities, but at the same time raises new challenges for the successful design of interactive systems.

The aim of this course is to introduce advanced concepts and theories as well as current practice of designing interactive systems. A specific focus is set on designing AI-based interactive systems for individuals and groups at work ranging from personal productivity assistants to AI-augmented virtual collaboration.

The course is complemented with hands-on exercises and a design capstone project in cooperation with an industry partner. In the project, students in a team effort apply state-of-the-art design methods & techniques and create an interactive system design prototype with a specific focus on human-AI interaction.

### Learning objectives

- Explain what interactive systems are and how they can be conceptualized
- Describe the unique characteristics of human-AI interaction and their impact on designing interactive systems
- Understand the human-centered design process and know how to apply corresponding methods and tools
- Understand the concepts and theoretical foundations that guide the design of interactive systems
- Know key concepts, design principles and design methods for contemporary interactive systems focusing on human-AI interaction
- Get hands-on experience by applying lecture content in a design capstone project

### 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

## 7.60 Course: Development of Sustainable, Digital Business Models [T-WIWI-113663]

**Responsible:** Daniel Duwe  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101507 - Innovation Management](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each winter term	1

Events					
WT 24/25	2500043	<a href="#">Development of Sustainable Digital Business Models</a>	2 SWS	Seminar / 	Weissenberger-Eibl

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

### Competence Certificate

Non exam assessment. The final grade is composed 50% of the grade of the written paper (ca. 5 Pages /Person) and 50% of the presentation of the results.

### Prerequisites

None

### Self service assignment of supplementary studies

This course can be used for self service assignment of grade acquired from the following study providers:

- Personalentwicklung und Berufliche Ausbildung

### Recommendation

Prior attendance of the course Innovation Management is recommended.

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

V

### Development of Sustainable Digital Business Models

2500043, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)  
On-Site**

### Content

The topic of sustainability is becoming increasingly important for companies in Europe. For example, the demand for sustainable products has risen sharply in many sectors. More and more companies are obliged by guidelines and standards to report on the sustainability of their activities. At the same time, the digital transformation is progressing and offers companies opportunities to implement or communicate their plans digitally. The seminar examines how the topic of sustainability is anchored in the digital business modelling of companies.

Students first learn about the dimensions of business models and sustainability. The seminar then discusses various concepts from the literature that take sustainability into account in business modelling. Students develop their own approach to sustainable digital business modelling and apply it to selected company examples from different sectors. The results are 1) presented and discussed in presentations and 2) recorded in seminar papers.



**7.61 Course: Digital Democracy [T-WIWI-113160]**

**Responsible:** Jonas Fegert  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101410 - Business & Service Engineering](#)  
[M-WIWI-101446 - Market Engineering](#)  
[M-WIWI-103117 - Data Science: Data-Driven Information Systems](#)

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

Events					
WT 24/25	00053	<a href="#">Übung zur Digital Democracy</a>	1 SWS	Practice /	Stein
WT 24/25	2500045	<a href="#">Digital Democracy - Challenges and Opportunities of the Digital Society</a>	2 SWS	Seminar /	Fegert, Stein, Bezzaoui, Pekkip
WT 24/25	2600052	<a href="#">Digital Democracy</a>	2 SWS	Lecture /	Fegert

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

**Competence Certificate**

Alternative exam assessment. The examination consists of two parts (presentation and oral exam). Details on the design of the exam will be announced at the beginning of the course.

**Annotation**

Limited to 25 students. Application (cover letter) via the Wiwi-portal.

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

**Digital Democracy**

2600052, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

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

**Content**

*The "Digital Democracy" Lecture deals with opportunities and challenges of democracy and participation in a digitalized world. Social networks and other platforms have become a central place for human interaction.*

*These technologies open up many possibilities to connect people, promote societal discourse, and organize social movements. On the other hand, they are also used to undermine democracy by extremist forces.*

*One example is the spread of disinformation through social media, which can undermine trust in democratic institutions and exacerbate divisions in society. Big tech actors pursue their own economically driven interests, some of which run counter to societal ones.*

*So to what extent can Internet platforms help strengthen social discourse? And what measures can be taken to promote the quality and diversity of discourse in the digital world? What role do big tech players play in digital democracy and how can their interests be reconciled with democratic principles? These and many more questions will be explored in the lecture. The lecture introduces theoretical foundations and evidence-based research on digital democracy. It will address the following questions: What characterizes deliberative democracies, how do democracies change, and what can damage them? How does social polarization emerge and what drives it - off- and online. Accordingly, different platform types and phenomena of disinformation, such as clickbait, will be presented. The last part of the lecture series will deal with the search for approaches and alternatives to these problems.*

*The exercise session connected to this lecture is conducted in cooperation with an NGO and applies the lecture content in a practical context: The formulation of a data-based policy recommendation.*

**Organizational issues**

Die Teilnahme am Kurs ist auf 25 Plätze beschränkt, diese erfolgt über das Wiwi-Portal: <https://portal.wiwi.kit.edu/ys/8373>


Der Kick-off findet am Fr, 25.10.2024 um 09:00 im 11.40 Seminarraum 231 statt.





T

**7.62 Course: Digital Health [T-WIWI-109246]**

**Responsible:** Prof. Dr. Ali Sunyaev  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each winter term	3

Events					
WT 24/25	2511402	<a href="#">Digital Health</a>	2 SWS	Lecture / 	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.

## T

**7.63 Course: Digital Marketing [T-WIWI-112693]**

**Responsible:** Prof. Dr. Ann-Kristin Kupfer  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-105312 - Marketing and Sales Management](#)  
[M-WIWI-106258 - Digital Marketing](#)

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

Events					
ST 2024	2571185	<a href="#">Digital Marketing</a>	2 SWS	Lecture / 🗎	Kupfer
ST 2024	2571186	<a href="#">Digital Marketing Exercise</a>	1 SWS	Practice / 🗎	Daumann
Exams					
ST 2024	7900064	<a href="#">Digital Marketing</a>			Kupfer
ST 2024	7900070	<a href="#">Digital Marketing</a>			Kupfer

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

**Competence Certificate**

The control of success is done by the elaboration and presentation of a group task as well as a written exam. Further details on the design of the performance review will be announced during the lecture.

**Prerequisites**

None

**Recommendation**

Students are highly encouraged to actively participate in class.

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

## V

**Digital Marketing**

2571185, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
On-Site

**Content**

Students learn the theoretical foundations of digital marketing and its most important concepts. They develop an understanding both for the digital consumer and the digital environment. Special emphasis will be given to digital marketing strategies and practices, such as content marketing and influencer marketing. A tutorial offers the opportunity to apply the key learnings of the lecture as part of a group work.

The learning objectives are as follows:

- Getting to know the theoretical foundations of digital marketing
- Evaluating digital marketing strategies and practices (e.g., in the context of content marketing and influencer marketing)
- Fostering critical and analytical thinking skills and the application of knowledge to marketing problems
- Improving English skills

Total time required for 4.5 credit points: approx. 135 hours

Attendance time: 30 hours

Self-study: 105 hours

**Organizational issues**

Termine werden bekannt gegeben.

T

**7.64 Course: Digital Marketing and Sales in B2B [T-WIWI-106981]**

**Responsible:** Prof. Dr. Martin Klarmann  
Anja Konhäuser

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

**Part of:** [M-WIWI-105312 - Marketing and Sales Management](#)  
[M-WIWI-106258 - Digital Marketing](#)

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

Events					
ST 2024	2571156	<a href="#">Digital Marketing and Sales in B2B</a>	1 SWS	Others (sons / ●)	Konhäuser
Exams					
ST 2024	7900297	<a href="#">Digital Marketing and Sales in B2B</a>			Klarmann

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

**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**

This course will not take place in the summer term 2023, but is expected to be offered again on a regular basis starting in the summer term 2024.

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](http://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](http://marketing.iism.kit.edu)). Please note that only one of the 1.5-ECTS courses can be attended in this module.

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

V

**Digital Marketing and Sales in B2B**

2571156, SS 2024, 1 SWS, Language: English, [Open in study portal](#)

**Others (sonst.)  
On-Site**

**Content****Learning Sessions:**

The class gives insights into digital marketing strategies as well as the effects and potential of different channels (e.g., SEO, SEA, Social Media). After an overview of possible activities and leverages in the digital marketing field, including their advantages and limits, the focus will turn to the B2B markets. There are certain requirements in digital strategy specific to the B2B market, particularly in relation to the value chain, sales management and customer support. Therefore, certain digital channels are more relevant for B2B marketing than for B2C marketing.

Once the digital marketing and tactics for the B2B markets are defined, further insights will be given regarding core elements of a digital strategy: device relevance (mobile, tablet), usability concepts, website appearance, app decision, market research and content management. A major advantage of digital marketing is the possibility of being able to track many aspects of user reactions and user behaviour. Therefore, an overview of key performance indicators (KPIs) will be discussed and relationships between these KPIs will be explained. To measure the effectiveness of digital activities, a digital report should be set up and connected to the performance numbers of the company (e.g. product sales) – within the course the setup of the KPI dashboard and combination of digital and non-digital measures will be shown to calculate the Return on Investment (RoI).

**Presentation Sessions:**

After the learning sessions, the students will form groups and work on digital strategies within a case study format. The presentation of the digital strategy will be in front of the class whereas the presentation will take 20 minutes followed by 10 minutes questions and answers.

- Understand digital marketing and sales approaches for the B2B sector
- Recognise important elements and understand how-to-setup of digital strategies
- Become familiar with the effectiveness and usage of different digital marketing channels
- Understand the effect of digital sales on sales management, customer support and value chain
- Be able to measure and interpret digital KPIs
- Calculate the Return on Investment (RoI) for digital marketing by combining online data with company performance data

time of presentness = 15 hrs.

private study = 30 hrs.

**Organizational issues**

Blockveranstaltung, Raum 115, Geb. 20.21, Termine werden noch bekannt gegeben

**Literature**



-





T

**7.65 Course: Digital Services: Innovation & Business Models [T-WIWI-112757]**

**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-102754 - Service Economics and Management](#)  
[M-WIWI-102806 - Service Innovation, Design & Engineering](#)  
[M-WIWI-102808 - Digital Service Systems in Industry](#)

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

Events					
ST 2024	2595468	<a href="#">Digital Services: Innovation &amp; Business Models</a>	1.5 SWS	Lecture / 	Satzger, Benz, Schüritz, Heinz
ST 2024	2595469	<a href="#">Übung zu Digital Services: Innovation &amp; Business Models</a>	1.5 SWS	Practice / 	Satzger, Benz, Schüritz, Heinz
Exams					
ST 2024	7900222	<a href="#">Digital Services: Innovation &amp; Business Models</a>			Satzger
WT 24/25	7900039	<a href="#">Digital Services: Innovation &amp; Business Models</a>			Satzger

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

**Competence Certificate**

The assessment consists of a written exam (60 min.).

**Prerequisites**

None

**Recommendation**

None

**Annotation**

The course "Digital Services: Innovation & Business Models" replaces the course Service Innovation, based on a revised course concept and content. The focus will be on the closer integration of the topics of service innovation and digitalization. Previous foundational content (e.g., on service innovation challenges or human-centered innovation methods) will remain. New content will cover topics such as digital platforms and ecosystems, IoT and smart service innovation, and business models.

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

V

**Digital Services: Innovation & Business Models**

2595468, SS 2024, 1.5 SWS, Language: English, [Open in study portal](#)

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

**Content**

Leveraging data and digital technologies for business success is a key challenge for organizations as they need to

- get aware of the newly arising potential
- develop suitable digital services that are user-centric and individualized
- "servitize" their offering portfolio and business model
- transform their organizations

This course will equip students with concepts and methods to tackle this challenge along two dimensions: First, we will cover innovation as a concept as well as apply contemporary innovation methods (like Design Thinking, Open Innovation) to the services space. Second, we deal with leveraging innovation to develop new business models (including multi-partner concepts in platforms or ecosystems), to servitize existing business models (e.g., via product-service-systems), and to accordingly transform the organization.

The course links innovation and business model theories with practical examples and exercises. Students are asked to actively engage in the discussion.

**Organizational issues**

The course will be offered in the form of a flipped classroom concept. The lecture will be recorded in advance and made available online. During the “in presence” sessions, the contents of the lecture will be applied and expanded on.

**Literature**

- Böhmann, T./ Leimeister, J.M./ Möslin, K. (2014), Service Systems Engineering, Business & Information Systems Engineering, Vol. 6, No.2, 73-79.
- Cardoso, J., Fromm, H., Nickel, S., Satzger, G., Studer, R., & Weinhardt, C. (Eds.) (2015). Fundamentals of service systems (Vol. 12). Heidelberg: Springer.
- Chesbrough, H. (2011). Open services innovation: Rethinking your business to grow and compete in a new era. John Wiley & Sons.
- Rogers, S. (2003). Diffusion of Innovations. 5. ed. New York: Free Press.
- Satzger, G., Benz, C., Böhmann, T., Roth, A. (2022). Servitization and Digitalization as Siamese Twins – Concepts and Research Agenda. Edvardsson/Tronvoll (eds.): The Palgrave Handbook of Service Management, 967-989.
- Uebernicketel, F., Brenner, W., Pukall, B., Naef, T., & Schindlholzer, B. (2015). Design Thinking: Das Handbuch. Frankfurt am Main: Frankfurter Allgemeine Buch.
- Vargo, S.L., Lusch, R.F. (2017). Service-dominant logic 2025. Int. J. Res. Mark. 34, 46–67.
- Weill, P.; Woerner, S.L. (2018): “What’s your Digital Business Model? – Six Questions to Help you Build the Next-Generation Enterprise“. Boston, Massachusetts: Harvard Business Review Press.

**Übung zu Digital Services: Innovation & Business Models**

2595469, SS 2024, 1.5 SWS, Language: English, [Open in study portal](#)

**Practice (Ü)  
On-Site**

**Content**

Leveraging data and digital technologies for business success is a key challenge for organizations as they need to

- get aware of the newly arising potential
- develop suitable digital services that are user-centric and individualized
- “servitize” their offering portfolio and business model
- transform their organizations

This course will equip students with concepts and methods to tackle this challenge along two dimensions: First, we will cover innovation as a concept as well as apply contemporary innovation methods (like Design Thinking, Open Innovation) to the services space. Second, we deal with leveraging innovation to develop new business models (including multi-partner concepts in platforms or ecosystems), to servitize existing business models (e.g., via product-service-systems), and to accordingly transform the organization.

The course links innovation and business model theories with practical examples and exercises. Students are asked to actively engage in the discussion.

**Organizational issues**

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- Böhmann, T./ Leimeister, J.M./ Möslin, K. (2014), Service Systems Engineering, Business & Information Systems Engineering, Vol. 6, No.2, 73-79.
- Cardoso, J., Fromm, H., Nickel, S., Satzger, G., Studer, R., & Weinhardt, C. (Eds.) (2015). Fundamentals of service systems (Vol. 12). Heidelberg: Springer.
- Chesbrough, H. (2011). Open services innovation: Rethinking your business to grow and compete in a new era. John Wiley & Sons.
- Rogers, S. (2003). Diffusion of Innovations. 5. ed. New York: Free Press.
- Satzger, G., Benz, C., Böhmann, T., Roth, A. (2022). Servitization and Digitalization as Siamese Twins – Concepts and Research Agenda. Edvardsson/Tronvoll (eds.): The Palgrave Handbook of Service Management, 967-989.
- Uebernicketel, F., Brenner, W., Pukall, B., Naef, T., & Schindlholzer, B. (2015). Design Thinking: Das Handbuch. Frankfurt am Main: Frankfurter Allgemeine Buch.
- Vargo, S.L., Lusch, R.F. (2017). Service-dominant logic 2025. Int. J. Res. Mark. 34, 46–67.
- Weill, P.; Woerner, S.L. (2018): “What’s your Digital Business Model? – Six Questions to Help you Build the Next-Generation Enterprise“. Boston, Massachusetts: Harvard Business Review Press.





T

## 7.66 Course: Discrete-Event Simulation in Production and Logistics [T-WIWI-102718]

**Responsible:** Hon.-Prof. Dr. Sven Spieckermann  
**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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	2

Events					
ST 2024	2550488	<a href="#">Ereignisdiskrete Simulation in Produktion und Logistik</a>	3 SWS	Lecture / 	Spieckermann
Exams					
ST 2024	7900244	<a href="#">Discrete-Event Simulation in Production and Logistics</a>			Spieckermann

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

### 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 2024, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
On-Site

### 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.

### Organizational issues

Den Bewerbungszeitraum finden Sie auf der Veranstaltungswebseite im Lehre-Bereich unter [dol.ior.kit.edu](http://dol.ior.kit.edu)



**Literature**



- Gutenschwager K., Rabe M., Spieckermann S. und S. Wenzel (2017): Simulation in Produktion und Logistik, Springer, Berlin.
- 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

**7.67 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](#)  
[M-WIWI-101497 - Agglomeration and Innovation](#)  
[M-WIWI-106412 - Computation & Optimization](#)

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

Events					
WT 24/25	2560402	<a href="#">Dynamic Macroeconomics</a>	2 SWS	Lecture / 	Brumm
WT 24/25	2560403	<a href="#">Übung zu Dynamic Macroeconomics</a>	1 SWS	Practice / 	Hußmann
Exams					
ST 2024	7900165	<a href="#">Dynamic Macroeconomics</a>			Brumm

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

**Competence Certificate**

The assessment is a written exam (60 min.).

**Prerequisites**

None.

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

V

**Dynamic Macroeconomics**

2560402, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

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

**Content**

This course addresses macroeconomic questions on an advanced level. The main focus of this course is on dynamic programming and its fundamental role in modern macroeconomics. In the first part of the course, the necessary mathematical tools are introduced as well as basic applications in labor economics, economic growth and business cycle analysis. In the second part of the course, these basic models are expanded to incorporate household heterogeneity in various forms: Models of economic inequality to analyze the distributional impact of tax policies and models of overlapping generations to analyze the impact of social security reforms or changes in government debt. Finally, advanced methods based on sparse grids or neural nets are introduced to solve high-dimensional models. The course pursues a hands-on approach so that students not only gain theoretical insights but also learn numerical tools to solve dynamic economic models using the programming language Python.

**Literature**

Literatur und Skripte werden in der Veranstaltung angegeben.

T

## 7.68 Course: Economics of Innovation [T-WIWI-112822]

**Responsible:** Prof. Dr. Ingrid Ott  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101478 - Innovation and Growth](#)  
[M-WIWI-101497 - Agglomeration and Innovation](#)  
[M-WIWI-101514 - Innovation Economics](#)

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

Events					
ST 2024	2560236	<a href="#">Economics of Innovation</a>	2 SWS	Lecture / 🗣️	Ott
ST 2024	2560237	<a href="#">Exercises of Economics of Innovation</a>	1 SWS	Practice / 🗣️	Ott, Mirzoyan
Exams					
ST 2024	7900107	<a href="#">Economics of Innovation</a>			Ott
WT 24/25	7900077	<a href="#">Economics of Innovation</a>			Ott

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

**Competence Certificate**

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

**Prerequisites**

None

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-102840 - Innovation Theory and Policy](#) must not have been started.

**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

**Economics of Innovation**

2560236, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**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

**7.69 Course: Efficient Energy Systems and Electric Mobility [T-WIWI-102793]**

**Responsible:** Prof. Dr. Patrick Jochem  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101452 - Energy Economics and Technology](#)

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

Events					
ST 2024	2581006	<a href="#">Efficient Energy Systems and Electric Mobility</a>	2 SWS	Lecture / 	Jochem
Exams					
ST 2024	7981006	<a href="#">Efficient Energy Systems and Electric Mobility</a>	Fichtner		

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

**Competence Certificate**

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

**Prerequisites**

None

**Recommendation**

None

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

V

**Efficient Energy Systems and Electric Mobility**

2581006, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
On-Site

**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

**Organizational issues**

s. Institutsaushang

**Literature**



Wird in der Vorlesung bekanntgegeben.





T

## 7.70 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](#)

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

Events					
WT 24/25	2540454	<a href="#">eFinance: Information Systems for Securities Trading</a>	2 SWS	Lecture / 	Weinhardt
WT 24/25	2540455	<a href="#">Übungen zu eFinance: Information Systems for Securities Trading</a>	1 SWS	Practice / 	Motz, Motz
Exams					
ST 2024	7900269	<a href="#">eFinance: Information Systems for Securities Trading</a>			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.

### 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 24/25, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
On-Site

### Literature

- Picot, Arnold, Christine Bortenlänger, Heiner Röhr (1996): "Börsen im Wandel". Knapp, Frankfurt
- Harris, Larry (2003): "Trading and Exchanges - Market Microstructure for Practitioners". Oxford University Press, New York

### Weiterführende Literatur:



- Gomber, Peter (2000): "Elektronische Handelssysteme - Innovative Konzepte und Technologien". Physika Verlag, Heidelberg
- Schwartz, Robert A., Reto Francioni (2004): "Equity Markets in Action - The Fundamentals of Liquidity, Market Structure and Trading". Wiley, Hoboken, NJ





T

## 7.71 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-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Events					
ST 2024	2513404	<a href="#">Seminar Emerging Trends in Digital Health (Bachelor)</a>	2 SWS	Seminar / 	Sunyaev, Toussaint, Brecker, Danylak
ST 2024	2513405	<a href="#">Seminar Emerging Trends in Digital Health (Master)</a>	2 SWS	Seminar / 	Sunyaev, Toussaint, Brecker, Danylak
Exams					
ST 2024	7900146	<a href="#">Seminar Emerging Trends in Digital Health (Master)</a>			Sunyaev

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

**Competence Certificate**

The alternative exam assessment consists of a final thesis.

**Prerequisites**

None.

**Annotation**



The course is usually held as a block course.


## T

## 7.72 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-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Events					
ST 2024	2513402	<a href="#">Seminar Emerging Trends in Internet Technologies (Bachelor)</a>	2 SWS	Seminar / 	Sunyaev, Toussaint, Brecker, Danylak
ST 2024	2513403	<a href="#">Seminar Emerging Trends in Internet Technologies (Master)</a>	2 SWS	Seminar / 	Sunyaev, Toussaint, Brecker, Danylak
Exams					
ST 2024	7900128	<a href="#">Seminar Emerging Trends in Internet Technologies (Master)</a>			Sunyaev

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

**Competence Certificate**

The alternative exam assessment consists of a final thesis.

**Prerequisites**

None.

**Annotation**

The course is usually held as a block course.



T

**7.73 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	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each winter term	1

Events					
WT 24/25	2581962	<a href="#">Emissions into the Environment</a>	2 SWS	Lecture / 🗎	Karl
Exams					
ST 2024	7981962	<a href="#">Emissions into the Environment</a>			Schultmann

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

**Competence Certificate**

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

**Recommendation**

None

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

V

**Emissions into the Environment**

2581962, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**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

## 7.74 Course: Employment Law [T-INFO-111436]

**Responsible:** Dr. Alexander Hoff  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101216 - Private Business Law](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each summer term	2

Events					
ST 2024	24668	<a href="#">Employment Law</a>	2 SWS	Lecture / 	Hoff
Exams					
ST 2024	7500082	<a href="#">Employment Law</a>			Sattler
WT 24/25	7500001	<a href="#">Employment Law</a>			Sattler, Matz

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

T

**7.75 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	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each summer term	2

Events					
ST 2024	2581003	<a href="#">Energy and Environment</a>	2 SWS	Lecture / 🗎	Karl
Exams					
ST 2024	7900294	<a href="#">Energy and Environment NEW</a>			Karl
ST 2024	7981003	<a href="#">Energy and Environment</a>			Karl

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

**Competence Certificate**

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

**Prerequisites**

None.

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

V

**Energy and Environment**

2581003, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**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

## 7.76 Course: Energy Market Engineering [T-WIWI-107501]

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101411 - Information Engineering](#)  
[M-WIWI-101446 - Market Engineering](#)  
[M-WIWI-101451 - Energy Economics and Energy Markets](#)  
[M-WIWI-103720 - eEnergy: Markets, Services and Systems](#)  
[M-WIWI-106410 - Economics & Management](#)

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

Events					
ST 2024	2540464	<a href="#">Energy Market Engineering</a>	2 SWS	Lecture / 	Weinhardt, Miskiw
ST 2024	2540465	<a href="#">Übung zu Energy Market Engineering</a>	1 SWS	Practice / 	Semmelmann
Exams					
ST 2024	79852	<a href="#">Energy Market Engineering</a>			Weinhardt
WT 24/25	7900127	<a href="#">Energy Market Engineering</a>			Weinhardt

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

### Competence Certificate

The assessment consists of a written exam (60 min) (according to §4(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 2024, 2 SWS, Language: German, [Open in study portal](#)

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

### Content

The lecture "Energy Market Engineering" addresses the design and analysis of energy markets considering current developments and challenges. A particular focus is on the integration of renewable energies and the associated market mechanisms and regulations.

Specifically, the following topics are covered:

- **Introduction to Market Engineering:** What design elements do markets and specifically auctions have in general, and what influence does this have on participant behavior.
- **Introduction to Energy Markets:** Fundamentals and current trends in the energy system, including climate change and the expansion of renewable energies.
- **Market Design and Products:** Various pricing models such as nodal pricing, zonal pricing, and the structure of capacity markets.
- **Grid Expansion, Distribution Networks, and Flexibility Markets:** Analysis of distribution network markets and the role of flexibility options like demand response and storage technologies.
- **Intermittent Generation and Grid Stability:** Challenges posed by fluctuating renewable energies and strategies to ensure grid stability.
- **Digitalization and Market Transparency:** The role of digitalization in improving market transparency and efficiency, including the use of smart metering systems and data-driven approaches.
- **Current Research Projects and Developments:** Presentation of ongoing research projects and their significance for the future design of energy markets.

### 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

**7.77 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	Grading scale	Recurrence	Version
Oral examination	4,5	Grade to a third	Each winter term	2

Events					
WT 24/25	2540495	<a href="#">Übung zu Energy Networks and Regulation</a>	1 SWS	Practice / 	Rogat, Miskiw
Exams					
ST 2024	7900272	<a href="#">Energy Networks and Regulation</a>			Weinhardt
WT 24/25	7900198	<a href="#">Energy Networks and Regulation</a>			Weinhardt

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

**Competence Certificate**

Success is assessed in the form of an oral examination (in accordance with §4(2), 1 SPO).  
 The examination is offered in the semester of the lecture.

**Prerequisites**

None

**Recommendation**

None

**7.78 Course: Energy Trading and Risk Management [T-WIWI-112151]**

**Responsible:** N.N.  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101451 - Energy Economics and Energy Markets](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each summer term	2

Events					
ST 2024	2581020	<a href="#">Energy Trading and Risk Management</a>	2 SWS	Lecture /	Kraft, Fichtner, Beranek
Exams					
ST 2024	7981020	<a href="#">Energy Trade and Risk Management</a>			Fichtner

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

**Competence Certificate**

The lecture "Energiehandel und Risikomanagement" will be held in English under the title "Energy Trading and Risk Management" from the summer semester 2022. The examination for the English-language lecture will be offered in English from the summer semester 2022.

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

**Prerequisites**

None

**Recommendation**

None

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

**Energy Trading and Risk Management**

2581020, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)  
On-Site**

**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

**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

**7.79 Course: Engineering Interactive Systems: AI & Wearables [T-WIWI-113460]**

**Responsible:** Prof. Dr. Alexander Mädche  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-102806 - Service Innovation, Design & Engineering](#)  
[M-WIWI-104080 - Designing Interactive Information Systems](#)

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

**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.





T

**7.80 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	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each term	1

Events					
ST 2024	2545001	<a href="#">Entrepreneurship</a>	2 SWS	Lecture / 	Terzidis, Dang
WT 24/25	2545001	<a href="#">Entrepreneurship</a>	2 SWS	Lecture / 	Terzidis, Dang
Exams					
ST 2024	7900002	<a href="#">Entrepreneurship</a>			Terzidis
ST 2024	7900192	<a href="#">Entrepreneurship</a>			Terzidis
WT 24/25	7900045	<a href="#">Entrepreneurship</a>			Terzidis

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).

Students are offered the opportunity to earn a grade bonus through separate assignments. If the grade of the written exam 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 lecture.

**Prerequisites**

None

**Recommendation**

None

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

V

**Entrepreneurship**

2545001, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

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

**Content**

The lecture as a compulsory part of the module "Entrepreneurship" introduces the basic concepts of entrepreneurship. Important concepts and empirical facts are introduced, which relate to the conception and implementation of newly founded companies.

The focus here is on introducing methods for generating innovative business ideas, translating patents into business concepts, and general principles of business modeling and business planning. In particular, approaches such as Lean-Startup and Effectuation as well as concepts for financing young companies are covered.

A "KIT Entrepreneurship Talk" is part of each session, in which experienced founder and entrepreneur personalities report on their experiences in the practice of the establishment of an enterprise. Dates and speakers will be announced on the EnTechnon homepage.

**Learning objectives:**

The students will be introduced to the topic of entrepreneurship. After successful attendance of the course they should have an overview of the sub-areas of entrepreneurship and be able to understand basic concepts of entrepreneurship and apply key concepts.

**Workload:**

The total effort with 3 credit points: approx. 90 hours

Presence time: 30 hours

Pre- and postprocessing of the LV: 45.0 hours

Exam and exam preparation: 15.0 hours

**Examination:**

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation)

A grade bonus can be earned by successfully participating in a case study as part of the Entrepreneurship lecture. If the grade of the written exam is between 4.0 and 1.3, the bonus improves the grade by up to 0.3 or 0.4. The bonus only applies if you have passed the exam with at least a 4.0. More details will be provided in the lecture. Participation in the case study is voluntary.

Exam dates: tbd

**Organizational issues**

VL findet jeweils Di, 15:45 - 19:00 an folgenden Terminen statt:

16.04.2024

23.04.2024

30.04.2024

07.05.2024

14.05.2024

28.05.2024

04.06.2024

11.06.2024 (Prep Session)

17.06.2024 (Klausur)

**Literature**

Füglister, Urs, Müller, Christoph und Volery, Thierry (2008): Entrepreneurship

Ries, Eric (2011): The Lean Startup

Osterwalder, Alexander (2010): Business Model Generation

Aulet, Bill (2013): Disciplined Entrepreneurship. 24 Steps to a Successful Startup. Hoboken: Wiley.

R.C. Dorf, T.H. Byers: Technology Ventures – From Idea to Enterprise., (McGraw Hill 2008)

Hisrich, Robert D.; Ramadani, Veland (2017): Effective entrepreneurial management. Strategy, planning, risk management, and organization. Cham, Switzerland: Springer.

**Entrepreneurship**

2545001, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

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

**Content**

The lecture as an obligatory part of the module "Entrepreneurship" introduces the basic concepts of entrepreneurship. Important concepts and empirical facts are presented that relate to the conception and implementation of newly founded companies.

The focus here is on the introduction to methods for generating innovative business ideas, for transferring patents into business concepts and general principles of business modelling and business planning. In particular approaches such as Lean Startup and Effectuation as well as concepts for the financing of young enterprises are treated.

A "KIT Entrepreneurship Talk" is part of each session, in which experienced founder and entrepreneur personalities report on their experiences in practice of the establishment of an enterprise. Dates and speakers will be announced on the EnTechnon homepage.

**Learning objectives:**

The students are introduced to the topic Entrepreneurship. After successful attendance of the meeting they are to have an overview of the subranges of the Entrepreneurships and be able to understand basic concepts of the Entrepreneurships and apply key concepts.

**Workload:**

Total effort with 3 credit points: approx. 90 hours

Presence time: 30 hours

Pre- and postprocessing of the LV: 45.0 hours

Exam and exam preparation: 15.0 hours

**Examination:**

The assessment of success takes place in the form of a written examination (60 min.) (according to §4(2), 1 SPO). The grade is the grade of the written exam.

A grade bonus can be earned through successful participation in a case study in the Entrepreneurship lecture. If the grade of the written exam is between 4.0 and 1.3, the bonus improves the grade by up to 0.3 or 0.4. The bonus only applies if you have passed the exam with at least a 4.0. More details will be provided in the lecture. Participation in the case study is voluntary.

**Exam date:** tba

**Organizational issues**

VL findet jeweils Mo, 15:45 - 19:00 an folgenden Terminen statt:

21.10.2024

28.10.2024

04.11.2024

11.11.2024

18.11.2024

25.11.2024

02.12.2024

09.12.2024 (Prep Session 13:30 - 14:30)

**Literature**

Aulet, Bill (2013): Disciplined Entrepreneurship. 24 Steps to a Successful Startup. Hoboken: Wiley.

R.C. Dorf, T.H. Byers: Technology Ventures – From Idea to Enterprise., (McGraw Hill 2008)

Füglister, Urs, Müller, Christoph and Volery, Thierry (2008): Entrepreneurship

Hisrich, Robert D.; Ramadani, Veland (2017): Effective entrepreneurial management. Strategy, planning, risk management, and organization. Cham, Switzerland: Springer.

Ries, Eric (2011): The Lean Startup.

Osterwalder, Alexander (2010): Business Model Generation.

**7.81 Course: Entrepreneurship Research [T-WIWI-102894]**

**Responsible:** Prof. Dr. Orestis Terzidis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each summer term	1

Events					
ST 2024	2545002	<a href="#">Entrepreneurship Research</a>	2 SWS	Seminar /	Terzidis, Tittel, Rosales Bravo
Exams					
ST 2024	7900052	<a href="#">Entrepreneurship Research</a>			Terzidis

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

**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:*

**Entrepreneurship Research**

2545002, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
On-Site

**Content**

In this course, the students choose from various relevant and current research topics in entrepreneurship and independently develop a topic that suits them in small teams. Initially, there is an introduction to standard methods such as systematic literature review, design science, qualitative and quantitative data analysis, and more. The seminar topic must be scientifically prepared and presented in 15-20 pages as part of a written elaboration. The seminar results are presented in a block event at the end of the semester (20 min + 10 min open discussion).

**Learning Objectives**

The foundations of independent scholarly work (literature review, argumentation + discussion, citation of literature sources, application of qualitative, quantitative, and simulation methods) are developed as part of the written elaboration. The competencies acquired in the seminar can be utilized in preparing for a potential master's thesis. Therefore, the seminar is mainly aimed at students who intend to write their thesis at the Chair of Entrepreneurship and Technology Management and wish to gain substantial experience in entrepreneurship research.

**Organizational issues**

Monday, 17.06.2024, 10.00-17.00

Thursday, 27.06.2024, 10.00-17.00

Thursday, 25.07.2024, 10.00-17.00

Registration is via the Wiwi-Portal.

**Literature**

Will be announced in the seminar.

**7.82 Course: Entrepreneurship Seasonal School [T-WIWI-113151]**

**Responsible:** Prof. Dr. Orestis Terzidis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Irregular	1

Events					
WT 24/25	2500215	<a href="#">Entrepreneurship Seasonal School</a>	2 SWS	Block /	Weimar
Exams					
WT 24/25	7900146	<a href="#">Entrepreneurship Seasonal School</a>			Terzidis

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

**Competence Certificate**

Alternative exam assessment. The grade is composed of the presentation and the written elaboration. Details on the design of the examination will be announced in the course.

**Prerequisites**

The Seasonal School is intended for advanced bachelor's and all master's students (all disciplines). Participation in the selection process is a prerequisite.

**Recommendation**

Basic knowledge of business administration, attendance of the lecture Entrepreneurship as well as openness and interest in intercultural exchange are recommended. Solid knowledge of the English language is an advantage.

**Annotation**

Entrepreneurship Seasonal School

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

**Entrepreneurship Seasonal School**

2500215, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Block (B)  
On-Site**

**Content**

During the Entrepreneurship Seasonal School, students develop a business model based on innovative technologies and social problems in workshops in international teams for one week.

**Course Content:**

The Entrepreneurship Seasonal School brings together students from different universities to spend a week strengthening their knowledge of digital entrepreneurship in healthcare. Experience the life of an entrepreneur and learn how to attain resources to realize a product vision. During one week, you will develop a range of entrepreneurial competences crucial for establishing a successful venture. Our primary focus is on digital healthcare ventures, granting you the opportunity to delve into the realm of entrepreneurship within the healthcare system. By gaining a deep understanding of healthcare needs, you will utilize creativity techniques to uncover potential business ideas that provide value for patients and doctors. Additionally, you will learn how to create viable business models, dive into health regulations, and pitch your idea to a jury.

In WS 2023/24 the one-week program is being hosted by the Karlsruhe Institute of Technology, with co-teaching support from the Eucor partners University of Basel and the University of Strasbourg.

In the seminar you will work on a project in teams of max. 5 persons.

**Learning Objectives:**

After attending the event, you will be able to...

- describe the role of entrepreneurship
- develop innovative and technology-based solutions for societal problems,
- develop a viable business model for a problem,
- present a business idea to a panel of judges,
- and be empowered to work independently in multidisciplinary and multicultural teams

**Organizational issues**

Expected date: 17.02.25 – 21.02.25, Details will be announced later. Registration via wiwi portal.

T

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

Events					
ST 2024	2560548	<a href="#">Environmental and Ressource Policy</a>	2 SWS	Lecture / Practice (	Walz
Exams					
ST 2024	7900277	<a href="#">Environmental and Resource Policy</a>			Mitusch, 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 2024, 2 SWS, Language: German, [Open in study portal](#)**Lecture / Practice (VÜ)****Literature****Weiterführende Literatur:**

Michaelis, P.: *Ökonomische Instrumente in der Umweltpolitik. Eine anwendungsorientierte Einführung*, Heidelberg  
 OECD: *Environmental Performance Review Germany*, Paris



T

**7.84 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	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each winter term	2

Events					
WT 24/25	2521547	<a href="#">Umweltökonomik und Nachhaltigkeit (mit Übung)</a>	2 SWS	Lecture / Practice (	Walz
Exams					
ST 2024	7900273	<a href="#">Environmental Economics and Sustainability</a>			Mitusch

**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

**7.85 Course: Environmental Law [T-BGU-111102]**

**Responsible:** Dr. Ulrich Smeddinck  
**Organisation:** KIT Department of Civil Engineering, Geo and Environmental Sciences  
**Part of:** [M-WIWI-101468 - Environmental Economics](#)

Type	Credits	Grading scale	Recurrence	Expansion	Version
Written examination	3	Grade to a third	Each winter term	1 terms	1

Events					
WT 24/25	6111177	<a href="#">Environmental Law</a>	2 SWS	Lecture / 	Smeddinck
Exams					
ST 2024	8262111102_2	<a href="#">Environmental Law</a>			Smeddinck
WT 24/25	8262111102_1	<a href="#">Environmental Law</a>			Smeddinck

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

**Competence Certificate**

Written exam with 120 min

**Prerequisites**

None

**Annotation**

None

## T

## 7.86 Course: European and International Law [T-INFO-101312]

**Responsible:** Ulf Brühann  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-106754 - Public Economic and Technology Law](#)

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

Events					
ST 2024	24666	<a href="#">Europäisches und Internationales Recht</a>	2 SWS	Lecture / 🎧	Brühann
Exams					
ST 2024	7500084	<a href="#">European and International Law</a>			Zufall
WT 24/25	7500048	<a href="#">European and International Law</a>			Zufall

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

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

## V

## Europäisches und Internationales Recht

24666, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
On-Site

**Content**

The course will be held in German.

The total workload for this course unit is 90 hours for 3 credit points, of which 22.5 hours are spent in attendance.

**Organizational issues**

Die drei folgenden Blockveranstaltungen finden jeweils im Seminarraum Nr. 313 (Geb. 07.08) statt:

Montag, den 29.04.2024, 09:30 - 17:30 Uhr (Mittagspause wird flexibel gehalten)

Montag, den 27.05.2024, 09:30 - 17:30 Uhr (Mittagspause wird flexibel gehalten)

Montag, den 01.07.2024 09:30 - 17:00 Uhr (Mittagspause wird flexibel gehalten).

**Literature**

Literatur wird in der Vorlesung angegeben.

**Weiterführende Literatur**

Erweiterte Literaturangaben werden in der Vorlesung bekannt gegeben.

T

**7.87 Course: Experimental Design [T-WIWI-111395]**

**Responsible:** Prof. Dr. Benjamin Scheibehenne  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-105714 - Consumer Research](#)

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

Events					
WT 24/25	2500050	<a href="#">Experimental Design</a>	3 SWS	Others (sons / ●)	Seidler

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

**Competence Certificate**

Alternative exam assessment. Details will be announced at the beginning of the course.

**Annotation**

The course provides an overview of important methods of empirical research. Students learn basic theories and methods that are relevant in planning, conducting and evaluating experiments. They learn to analyze, critique, and independently develop experimental designs. The course covers, for example, the development of a research question, formulation of scientific hypotheses, sample selection, calculation of statistical power, the difference between correlative and causal relationships, and the relevance of experimental research to test the latter.

Exemplary studies from decision research are analyzed and discussed with respect to experimental design.

The workload of the course is 4.5 ECTS. This consists of exercises, smaller presentations by the students during the semester, as well as the preparation of the examination at the end of the semester.



The number of participants is limited. Places are allocated via the Wiwi-Portal. Course language is German.




## T

## 7.88 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-105923 - Incentives, Interactivity & Decisions in Organizations](#)

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

Events					
WT 24/25	2540489	<a href="#">Experimental Economics</a>	2 SWS	Lecture / 	Knierim
WT 24/25	2540493	<a href="#">Übung zu Experimental Economics</a>	1 SWS	Practice / 	del Puppo
Exams					
ST 2024	7900258	<a href="#">Experimental Economics</a>			Weinhardt

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

**Competence Certificate**

The assessment consists of a written exam (60 min).

**Prerequisites**

None

**Annotation**

The lecture will be taught in English.

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

## V

**Experimental Economics**

2540489, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)  
On-Site**

**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

**7.89 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	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 purpose of this placeholder is to make it possible to 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

## 7.90 Course: Facility Location and Strategic Supply Chain Management [T-WIWI-102704]

**Responsible:** Prof. Dr. Stefan Nickel  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-106412 - Computation & Optimization](#)

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

Events					
WT 24/25	2550486	<a href="#">Facility Location and Strategic Supply Chain Management</a>	2 SWS	Lecture / 🗎	Nickel
WT 24/25	2550487	<a href="#">Exercises for Facility Location and Strategic Supply Chain Management</a>	1 SWS	Practice / 🗎	Hoffmann
Exams					
ST 2024	7900027	<a href="#">Facility Location and Strategic Supply Chain Management</a>			Nickel
WT 24/25	7900091	<a href="#">Facility Location and Strategic Supply Chain Management</a>			Nickel

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

### Competence Certificate

The assessment consists of a written exam (60 min) according to Section 4 (2), 1 of the examination regulation. The exam takes place in every semester. Prerequisite for admission to examination is the successful completion of the online assessments.

### Prerequisites

Prerequisite for admission to examination is the successful completion of the online assessments.

### Recommendation

None

### Annotation

The lecture is held in every winter term. The planned lectures and courses for the next three years are announced online.

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

V

## Facility Location and Strategic Supply Chain Management

2550486, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
On-Site

### Organizational issues

Für die Klausurzulassung müssen 4 von 5 Online-Tests bestanden sein.

Die Zulassung ist ein Jahr gültig, außer es handelt sich um einen Zweitversuch. In diesem Falle müssen die Online-Tests nicht erneut absolviert werden.

### Literature

#### Weiterführende Literatur:

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

T

**7.91 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-106411 - Statistics & Econometrics](#)

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

Events					
WT 24/25	2520022	<a href="#">Financial Econometrics I</a>	2 SWS	Lecture / 🗣️	Schienle, Buse
WT 24/25	2520023	<a href="#">Übungen zu Financial Econometrics I</a>	2 SWS	Practice / 🗣️	Schienle, Buse
Exams					
ST 2024	7900223	<a href="#">Financial Econometrics</a>			Schienle
WT 24/25	7900123	<a href="#">Financial Econometrics II</a>			Schienle
WT 24/25	7900126	<a href="#">Financial Econometrics</a>			Schienle

Legend: 🗣️ Online, 🗣️🗣️ Blended (On-Site/Online), 🗣️ On-Site, ✖ Canceled

**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 next lecture will take place in the winter semester 2022/23.

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

V

**Financial Econometrics I**

2520022, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**Content****Learning objectives:**

The student

- shows a broad knowledge of financial econometric estimation and testing techniques
- is able to apply his/her technical knowledge using software in order to critically assess empirical problems

**Content:**

ARMA, ARIMA, ARFIMA, (non)stationarity, causality, cointegration, ARCH/GARCH, stochastic volatility models, computer based exercises

**Requirements:**

It is recommended to attend the course *Economics III: Introduction to Econometrics* [2520016] prior to this course.

**Workload:**

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours



**Literature**

Taylor, S. J. (2005): "Asset Price Dynamics, Volatility, and Prediction", Princeton University Press.

Tsay, R. S. (2005): "Analysis of Financial Time Series: Financial Econometrics", Wiley, 2nd edition.

Cochrane, J. H. (2005): "Asset Pricing", revised edition, Princeton University Press.

Campbell, J. Y., A. W. Lo, and A. C. MacKinlay (1997): "The Econometrics of Financial Markets", Princeton University Press.

Hamilton, J. D. (1994): "Time Series Analysis", Princeton University Press.

Additional literature will be discussed in the lecture.

## T

## 7.92 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-106411 - Statistics & Econometrics](#)

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

Events					
ST 2024	2521302	<a href="#">Financial Econometrics II</a>	2 SWS	Lecture / 🎧	Schienle, Buse
ST 2024	2521303	<a href="#">Übung zu Financial Econometrics II</a>	1 SWS	Practice / 🎧	Buse, Schienle
Exams					
ST 2024	7900081	<a href="#">Financial Econometrics II</a>			Schienle

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

**Competence Certificate**

Written examination (90 minutes). If the number of participants is low, an oral examination will be held instead.

**Prerequisites**

None

**Recommendation**

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

**Annotation**

Course language is English

The next lecture will take place in the summer semester of 2023.

T

**7.93 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-101502 - Economic Theory and its Application in Finance](#)

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

Events					
WT 24/25	2530232	<a href="#">Financial Intermediation</a>	2 SWS	Lecture / 🗎	Ruckes
WT 24/25	2530233	<a href="#">Übung zu Finanzintermediation</a>	1 SWS	Practice	Ruckes, Benz
Exams					
ST 2024	7900078	<a href="#">Financial Intermediation</a>			Ruckes
WT 24/25	7900063	<a href="#">Financial Intermediation</a>			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 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
On-Site**

**Organizational issues**

Terminankündigungen des Instituts beachten

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

- Hartmann-Wendels/Pfingsten/Weber (2014): Bankbetriebslehre, 6. Auflage, Springer Verlag.
- Freixas/Rochet (2008): Microeconomics of Banking, 2. Auflage, MIT Press.

T

## 7.94 Course: Fundamentals for Financial -Quant and -Machine Learning Research [T-WIWI-111846]

**Responsible:** Prof. Dr. Maxim Ulrich

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

**Part of:** [M-WIWI-105894 - Foundations for Advanced Financial -Quant and -Machine Learning Research](#)

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

### Competence Certificate

The module examination is an alternative exam assessment with a maximum score of 100 points to be achieved. These points are distributed over 4 worksheets to be submitted during the semester. The worksheets cover the respective material of the module and are handed out, worked on and assessed in lecture weeks 3 (10 points), 6 (20 points), 9 (30 points) and 12 (40 points).

The module-wide exam (all 4 worksheets) must be taken in the same semester.

The worksheets are a mixture of analytical tasks and programming tasks with financial data.

### Recommendation

- Strongly recommended to have good knowledge in financial econometrics (MLE, OLS, GLS, ARMA-GARCH), mathematics (differential equations, difference equations and optimization), investments (CAPM, factor models), asset pricing (SDF, SDF pricing), derivatives (Black-Scholes, risk-neutral pricing), and programming of statistical concepts (Java or R or Python or Matlab or C or ...)
- Strongly recommended to have a strong interest for interdisciplinary research work in statistics, programming, applied math and financial economics.
- Students lacking the prior knowledge might find the resources of the Chair helpful: [www.youtube.com/c/cram-kit](http://www.youtube.com/c/cram-kit).

### Annotation

Teaching and learning format: Lecture and exercise.

The course is offered every second year.

T

## 7.95 Course: Fundamentals of National and International Group Taxation [T-WIWI-111304]

**Responsible:** Prof. Dr. Berthold Wigger  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101511 - Advanced Topics in Public Finance](#)

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

Events					
ST 2024	2560133	<a href="#">Fundamentals of National and International Group Taxation</a>	3 SWS	Lecture / ●	Wigger, Gutekunst
Exams					
ST 2024	790kobe	<a href="#">Fundamentals of National and International Group Taxation</a>			Wigger
WT 24/25	790kobe	<a href="#">Fundamentals of National and International Group Taxation</a>			Wigger

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

### Competence Certificate

Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1.5h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

### Prerequisites

None

### Recommendation


It is recommended to attend the course "Basics of German Company Tax Law and Tax Planning" beforehand.





T

**7.96 Course: Global Manufacturing [T-WIWI-112103]**

**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	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each winter term	1

Events					
WT 24/25	2581956	<a href="#">Global Manufacturing</a>	2 SWS	Lecture / 	Sasse
Exams					
ST 2024	7981956	<a href="#">Global Manufacturing</a>			Schultmann

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

**Competence Certificate**

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

**Prerequisites**

None

**Recommendation**

None

**Annotation**

The lecture will be held for the first time in the winter semester 2022/23.

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

V

**Global Manufacturing**

2581956, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**Blended (On-Site/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, siehe Homepage

**Literature**

Wird in der Veranstaltung bekannt gegeben.

T

## 7.97 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](#)  
[M-WIWI-106412 - Computation & Optimization](#)

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

Events					
ST 2024	2550134	<a href="#">Global Optimization I</a>	2 SWS	Lecture / 🗎	Stein
Exams					
ST 2024	7900205_SS2024_HK	<a href="#">Global Optimization I</a>			Stein
WT 24/25	7900004_WS2425_NK	<a href="#">Global Optimization I</a>			Stein

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

**Competence Certificate**

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

The exam is offered in the lecture of semester and the following semester.

The success check can be done also with the success control for "Global optimization II". In this case, the duration of the written exam is 120 min.

**Prerequisites**

None

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-103638 - Global Optimization I and II](#) must not have been started.

**Recommendation**

None

**Annotation**

Part I and II of the lecture are held consecutively in the **same** semester.

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

V

**Global Optimization I**

2550134, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
On-Site

**Content**

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

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

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

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

**Remark:**

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

**Learning objectives:**

The student

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

**Literature**

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

**Weiterführende Literatur:**

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



T

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

Events					
ST 2024	2550134	<a href="#">Global Optimization I</a>	2 SWS	Lecture / 🗣️	Stein
ST 2024	2550135	<a href="#">Exercise to Global Optimization I and II</a>	2 SWS	Practice / 🗣️	Stein, Beck
ST 2024	2550136	<a href="#">Global Optimization II</a>	2 SWS	Lecture / 🗣️	Stein
Exams					
ST 2024	7900207_SS2024_HK	<a href="#">Global Optimization I and II</a>			Stein
WT 24/25	7900006_WS2425_NK	<a href="#">Global Optimization I and II</a>			Stein

Legend: 🖥️ Online, 🔄 Blended (On-Site/Online), 🗣️ On-Site, ✖ Canceled

**Competence Certificate**

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

The examination is held in the semester of the lecture and in the following semester.

**Prerequisites**

None

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-102726 - Global Optimization I](#) must not have been started.
2. The course [T-WIWI-102727 - Global Optimization II](#) must not have been started.

**Recommendation**

None

**Annotation**

Part I and II of the lecture are held consecutively in the **same** semester.

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

V

**Global Optimization I**

2550134, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
On-Site**

**Content**

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

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

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

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

**Remark:**

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

**Learning objectives:**

The student

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

**Literature**

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

**Weiterführende Literatur:**

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

**Global Optimization II**

2550136, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
On-Site**

**Content**

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

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

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via alphaBB method
- Branch-and-bound methods
- Lipschitz optimization

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

**Remark:**

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

**Learning objectives:**

The student

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

**Literature**

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

**Weiterführende Literatur:**

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

T

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

Events					
ST 2024	2550136	<a href="#">Global Optimization II</a>	2 SWS	Lecture / 🗣️	Stein
Exams					
ST 2024	7900206_SS2024_HK	<a href="#">Global Optimization II</a>			Stein
WT 24/25	7900005_WS2425_NK	<a href="#">Global Optimization II</a>			Stein

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

**Competence Certificate**

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

The examination is held in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of "Global optimization I". In this case, the duration of the written examination takes 120 minutes.

**Prerequisites**

None

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-103638 - Global Optimization I and II](#) must not have been started.

**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

**Global Optimization II**

2550136, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**Content**

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

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

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via alphaBB method
- Branch-and-bound methods
- Lipschitz optimization

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

**Remark:**

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

**Learning objectives:**

The student

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

**Literature**

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

**Weiterführende Literatur:**

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

T

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

Exams			
ST 2024	7900283	<a href="#">Graph Theory and Advanced Location Models</a>	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

**7.101 Course: Growth and Development [T-WIWI-112816]**

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

Events					
WT 24/25	2561503	<a href="#">Growth and Development</a>	2 SWS	Lecture / 🗎	Ott
WT 24/25	2561504	<a href="#">Exercise for Growth and Development</a>	1 SWS	Practice / 🗎	Ott, Ghoniem
Exams					
ST 2024	7900105	<a href="#">Growth and Development</a>			Ott
WT 24/25	7900078	<a href="#">Growth and Development</a>			Ott

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

**Competence Certificate**

Depending on further pandemic developments, the examination will be offered either as an open-book examination or as a 60-minute written examination.

**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

**Growth and Development**

2561503, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**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 counterveil 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

**7.102 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	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each summer term	2

Events					
ST 2024	2581001	<a href="#">Heat Economy</a>	2 SWS	Lecture / 🗣️	Fichtner
Exams					
ST 2024	7981001	<a href="#">Heat Economy</a>			Fichtner

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

**Competence Certificate**

The assessment consists of a written (60 minutes) or oral exam (30 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

**Prerequisites**

None.

**Recommendation**

None

**Annotation**

See German version.

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

V

**Heat Economy**

2581001, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**Organizational issues**

Block, Seminarraum Standort West - siehe Institutsaushang

T

**7.103 Course: Human Factors in Autonomous Driving [T-WIWI-113059]**

**Responsible:** Prof. Dr. Alexey Vinel  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Events					
WT 24/25	2511452	<a href="#">Human Factors in Autonomous Driving</a>	2 SWS	Lecture / 🌀	Vinel, Bied, Schrapel
WT 24/25	2511453	<a href="#">Exercises Human Factors in Autonomous Driving</a>	1 SWS	Practice / 🌀	Vinel, Bied, Schrapel
Exams					
ST 2024	7900360	<a href="#">Human Factors in Autonomous Driving</a>			Vinel
WT 24/25	79AIFB_HFAD_C6	<a href="#">Human Factors in Autonomous Driving</a>			Vinel

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

**Competence Certificate**

The assessment of this course is a written examination (60 min) or an oral exam (20 min).

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

## T

**7.104 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-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)  
[M-WIWI-106413 - Digitalization & Society](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Irregular	3

Exams				
WT 24/25	79AIFB_HFSP_A1	<a href="#">Human Factors in Security and Privacy</a>		Volkamer

**Competence Certificate**

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (30 min) following §4, Abs. 2, 2 of the examination regulation. Only those who have successfully participated in the exercises and the lecture will be admitted to the examination.

**Prerequisites**

Both need to be done:

- Pass Quiz on Paper for Graphical Passwords
- Presentation of Results Exercise 2

+ 9 of the following 11 need to be done:

- Submit ILIAS certificate until Oct 24
- Pass Quiz on InfoSec Lecture
- Active participation exercise 1 Part 1 - Evaluation and analyses methods
- Pass Quiz Paper Discussion 1 - User Behaviour and motivation theories
- Active participation exercise 1 Part 2
- Pass Quiz Paper Discussion 2 - User Behaviour and motivation theories
- Pass Quiz Paper Discussion 3 - Security Awareness
- Active participation exercise 1 Part 3
- Pass Quiz Paper Discussion 4 - Graphical Authentication
- Pass Quiz Paper Discussion 5 - Shoulder Surfing Authentication
- Active participation exercise 2

**Recommendation**

The prior attendance of the lecture "Information Security" is strongly recommended.

**Annotation**

The lecture will not be offered in winter semester 2020/21.

Some lectures are in English, some in German.

T

**7.105 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](#)  
[M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations](#)  
[M-WIWI-106410 - Economics & Management](#)

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

Events					
ST 2024	2573003	<a href="#">Incentives in Organizations</a>	2 SWS	Lecture / 🗣️	Nieken
ST 2024	2573004	<a href="#">Übung zu Incentives in Organizations</a>	2 SWS	Practice / 🗣️	Nieken, Mitarbeiter, Walther, Gorny
Exams					
ST 2024	7900132	<a href="#">Incentives in Organizations</a>			Nieken
WT 24/25	7900201	<a href="#">Incentives in Organizations</a>			Nieken

Legend: 📺 Online, 🔄 Blended (On-Site/Online), 🗣️ On-Site, ✖ Cancelled

**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 2024, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)  
On-Site**

**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, Russel 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

**7.106 Course: Information Service Engineering [T-WIWI-106423]**

**Responsible:** Prof. Dr. Harald Sack  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)  
[M-WIWI-105880 - Informatics & Machine Learning](#)

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

Events					
ST 2024	2511606	<a href="#">Information Service Engineering</a>	2 SWS	Lecture / 🗎	Sack
ST 2024	2511607	<a href="#">Exercises to Information Service Engineering</a>	1 SWS	Practice / 🗎	Sack
Exams					
ST 2024	79AIFB_ISE_B3	<a href="#">Information Service Engineering (Registration until 15 July 2024)</a>			Sack
WT 24/25	79AIFB_ISE_B2	<a href="#">Information Service Engineering</a>			Sack

Legend: 🗎 Online, 🗎 Blended (On-Site/Online), 🗎 On-Site, x 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

**Information Service Engineering**

2511606, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**Content****- The Art of Understanding**

- From Numbers to Insights
- Data, Information, and Knowledge
- Natural Language
- What is Successful Communication?
- The Art of Understanding

**- Natural Language Processing**

- NLP and Basic Linguistic Knowledge
- NLP Applications, Techniques and Challenges
- How to evaluate an NLP Experiment?
- Tokenization and Word Normalisation
- Statistical Language Models (N-Gram Model)
- Naive Bayes Text Classification
- Distributional Semantics and Word Vectors

**- Knowledge Graphs**

- Knowledge Representations and Ontologies
- Resource Description Framework (RDF)
- Modeling with RDFS
- Querying RDF(S) with SPARQL
- Popular Knowledge Graphs - Wikidata and DBpedia
- Ontologies with the Web Ontology Language (OWL)
- Linked Data Quality Assurance with SHACL
- From Linked Data to Knowledge Graphs

**- Basic Machine Learning**

- Machine Learning Fundamentals
- Evaluation and Generalization Problems
- Linear Regression
- Decision Trees
- Unsupervised Learning
- Neural Networks and Deep Learning
- Word Embeddings
- Knowledge Graph Embeddings

**- ISE Applications**

- Knowledge Graph Completion
- Knowledge Graphs and Large Language Models
- Semantic and 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.
- A. Hogan, The Web of Data, Springer, 2020.
- G. Rebal, A. Ravi, S. Churiwala, An Introduction to Machine Learning, Springer, 2019.





T

## 7.107 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	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each summer term	1

Events					
ST 2024	2545100	<a href="#">Innovation Management: Concepts, Strategies and Methods</a>	2 SWS	Lecture / 	Weissenberger-Eibl
Exams					
ST 2024	7900144	<a href="#">Innovation Management: Concepts, Strategies and Methods</a>			Weissenberger-Eibl
WT 24/25	7900145	<a href="#">Innovation Management: Concepts, Strategies and Methods</a>			Weissenberger-Eibl

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

### 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 2024, 2 SWS, Language: German, [Open in study portal](#)

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

### 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

**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

## 7.108 Course: Innovation Theory and Policy [T-WIWI-102840]

**Responsible:** Prof. Dr. Ingrid Ott  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-106408 - Digital Economics](#)

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

Events					
ST 2024	2560236	<a href="#">Economics of Innovation</a>	2 SWS	Lecture / 	Ott
ST 2024	2560237	<a href="#">Exercises of Economics of Innovation</a>	1 SWS	Practice / 	Ott, Mirzoyan
Exams					
ST 2024	7900107	<a href="#">Economics of Innovation</a>			Ott
WT 24/25	7900077	<a href="#">Economics of Innovation</a>			Ott

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

### Competence Certificate

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

### Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-112822 - Economics of Innovation](#) must not have been started.

### Recommendation

Basic knowledge of micro- and macroeconomics is required, as taught, for example, in the courses Economics I and Economics II, which are strongly recommended (but not mandatory). An interest in quantitative-mathematical modeling is also required.

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

## V

## Economics of Innovation

2560236, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
On-Site

**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

**7.109 Course: Innovation2Business – Innovation Strategy in the Industrial Corporate Practice [T-MACH-112882]****Responsible:** Prof. Dr.-Ing. Albert Albers**Organisation:** KIT Department of Mechanical Engineering**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

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

Events					
WT 24/25	2145182	<a href="#">Innovation2Business – Innovation Strategy in the Industrial Corporate Practice</a>	2 SWS	Lecture / 	Albers
Exams					
WT 24/25	76-T-MACH-112882	<a href="#">Innovation2Business – innovation strategy in the industrial corporate practice</a>			Albers

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

Written exam based on the lecture handout and materials, duration 90 minutes

**Prerequisites**

none

**Recommendation**

None

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

## V

**Innovation2Business – Innovation Strategy in the Industrial Corporate Practice Lecture (V)**  
2145182, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#) **On-Site****Content**

lecture block at the Bühl &amp; Herzogenaurach locations with plant tours &amp; fireside evenings + exam-preparatory Q&amp;A.

Exam: written, limited to 30 seats (recommended for: Master's degree; mechanical engineering, industrial engineering, electrical engineering, computer science) → see module manual for details.

In this lecture series, use Schaeffler as an example to learn how global companies continuously transform themselves to grow sustainably and become

maintain a leading position in the global market in the long term through business-oriented innovation.

Together we will go through the most important elements of the innovation and development process and learn about the successes and learnings based on

vivid examples from practice.

Join the fireside evenings with the speakers to discuss the lecture content and beyond in a relaxed atmosphere.

The event is limited to 30 students and is free for you (meals, bus transfers &amp; accommodations).

**Organizational issues**

Vorlesung findet an Schaeffler-Standorten (Herzogenaurach und Bühl) statt.

Sprache: Unterlagen Englisch, Vortragsprache Deutsch

T

**7.110 Course: Intelligent Agent Architectures [T-WIWI-111267]**

**Responsible:** Prof. Dr. Andreas Geyer-Schulz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services](#)

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

Events					
WT 24/25	2540525	<a href="#">Intelligent Agent Architectures</a>	2 SWS	Lecture / 🗎	Geyer-Schulz
WT 24/25	2540526	<a href="#">Übung zu Intelligent Agent Architectures</a>	1 SWS	Practice / 🗎	Geyer-Schulz, Bell
Exams					
ST 2024	7900069	<a href="#">Intelligent Agent Architectures (Nachklausur WS 2023/2024)</a>			Geyer-Schulz
WT 24/25	79011480	<a href="#">Intelligent Agent Architectures (WS 2024/2025)</a>			Geyer-Schulz

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

**Competence Certificate**

Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five 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 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**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

**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

**7.111 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-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services](#)

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

Events					
ST 2024	2540537	<a href="#">Intelligent Agents and Decision Theory</a>	2 SWS	Lecture	Geyer-Schulz
ST 2024	2540538	<a href="#">Übung zu Intelligent Agents and Decision Theory</a>	1 SWS	Practice	Schweizer
Exams					
ST 2024	7900306	<a href="#">Intelligent Agents and Decision Theory</a>			Geyer-Schulz
WT 24/25	7900294	<a href="#">Intelligent Agents and Decision Theory (Nachklausur SoSe 2024)</a>			Geyer-Schulz

**Competence Certificate**

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.

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

V

**Intelligent Agents and Decision Theory**2540537, SS 2024, 2 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. Learning: Bayesian Networks (Basics)
9. Learning: Bayesian Networks (Algorithms I)
10. Learning: Bayesian Networks (Algorithms II)

Note: This rough outline may be subject to change.

### Literature

Bamberg, Coenenberg & Krapp (2019). Betriebswirtschaftliche Entscheidungslehre (16th ed.). Verlag Franz Vahlen GmbH.

Fishburn (1988). Nonlinear preference and utility theory. Baltimore: Johns Hopkins University 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.**

**Koller, D., & Friedman, N. (2009). Probabilistic graphical models: principles and techniques. MIT Press.**

Sutton & Barto (2018). Reinforcement learning: An introduction. Cambridge: MIT press.

T

**7.112 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-105312 - Marketing and Sales Management](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	6	Grade to a third	see Annotations	1

Events					
WT 24/25	2572189	<a href="#">International Business Development and Sales</a>	4 SWS	Block / 🌐	Klarmann, Terzidis, Schmitt

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**

Please contact the Marketing and Sales Research Group for further information.

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

V

**International Business Development and Sales**

2572189, WS 24/25, 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](http://marketing.iism.kit.edu)) shortly before the start of the lecture period.

Total workload for 6 ECTS: about 180 hours.








T

## 7.113 Course: Internet Law [T-INFO-101307]

**Responsible:** N.N.  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101215 - Intellectual Property Law](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each winter term	2

Events					
WT 24/25	24354	<a href="#">Internet Law</a>	2 SWS	Lecture / 	Sattler
Exams					
ST 2024	7500057	<a href="#">Internet Law</a>			Sattler
WT 24/25	7500060	<a href="#">Internet Law</a>			Sattler

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

**Competence Certificate**

The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 120 minutes.

**Prerequisites**

The course **Ausgewählte Rechtsfragen des Internetrechts T-INFO-108462** may not have started.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-INFO-108462 - Selected Legal Issues of Internet Law](#) must not have been started.

**Recommendation**

None.

**Annotation**

Lecture (with written exam) **Internet Law** T-INFO-101307 is offered in the winter semester.

Colloquium (other type of examination) **Selected Legal Issues in Internet Law** T-INFO-108462 is offered in the summer semester.

T

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

Exams			
ST 2024	7900251	<a href="#">Introduction to Bayesian Statistics for Analyzing Data</a>	Scheibehenne

### Competence Certificate

Grades will be based on active participation (50%) and homework assignments (50%). The points system for the assessment is determined by the lecturer of the course. It will be announced at the beginning of the course.

### 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, the number of participants will be limited.





T

**7.115 Course: Introduction to Sociology [T-GEISTSOZ-112798]**

**Responsible:** Prof. Dr. Michael Mäs  
**Organisation:** KIT Department of Humanities and Social Sciences  
**Part of:** [M-WIWI-106413 - Digitalization & Society](#)

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

Events					
WT 24/25	5011001	<a href="#">Introduction to Sociology</a>	2 SWS	Lecture / 	Mäs

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

**Self service assignment of supplementary studies**

This course can be used for self service assignment of grade acquired from the following study providers:

- House of Competence

T

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

Events					
ST 2024	2550470	<a href="#">Introduction to Stochastic Optimization</a>	2 SWS	Lecture / 📺	Rebennack
ST 2024	2550471	<a href="#">Übung zur Einführung in die Stochastische Optimierung</a>	1 SWS	Practice / 🎧	Rebennack, Kandora
ST 2024	2550474	<a href="#">Rechnerübung zur Einführung in die Stochastische Optimierung</a>	2 SWS	Others (sons)	Rebennack, Kandora
Exams					
ST 2024	7900311	<a href="#">Introduction to Stochastic Optimization</a>			Rebennack
WT 24/25	7900242	<a href="#">Introduction to Stochastic Optimization</a>			Rebennack

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

### Competence Certificate

The assessment consists of a written exam (60 minutes). The exam takes place in every semester.

### Prerequisites

None.

T

**7.117 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**  
Examination of another type

**Credits**  
6

**Grading scale**  
Grade to a third

**Recurrence**  
Irregular

**Version**  
1

Events					
ST 2024	2500037	<a href="#">Joint Entrepreneurship School Egypt</a>	4 SWS	Seminar /	Terzidis, Mohammadi
ST 2024	2545021	<a href="#">Joint Entrepreneurship School China</a>	4 SWS	Seminar /	Kleinn, Terzidis, Mohammadi
Exams					
ST 2024	7900328	<a href="#">Joint Entrepreneurship Summer School (Egypt)</a>			Terzidis
ST 2024	7900346	<a href="#">Joint Entrepreneurship Summer School (China)</a>			Terzidis

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

**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. The points system for the assessment is determined by the lecturer of the course. It will be announced at the beginning of the course.

**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.

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

V

**Joint Entrepreneurship School Egypt**

2500037, SS 2024, 4 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

**Content**

During the Summer School in Egypt and Karlsruhe, students develop a business model of technologies and patents developed at KIT in workshops in German-Egypt tandems over the period of two weeks.

**Organizational issues**

- Briefing: April / May
- Karlsruhe: Presumably: 29/7 to 2/8 - 2024
- Cairo: Presumably: 1/9 -5/9 - 2024
- Deliverables: October 2024

**Joint Entrepreneurship School China**2545021, SS 2024, 4 SWS, Language: English, [Open in study portal](#)**Seminar (S)  
On-Site****Content**

During the Summer School in Shanghai and Karlsruhe, students develop a business model of technologies and patents developed at KIT in workshops in German-Chinese tandems over the period of two weeks.

Click on our website for detailed information and a video: <https://etm.entechnon.kit.edu/english/1095.php>

**Organizational issues**

Dates:

- Briefing: April / May
- Karlsruhe: Presumably: August 05-09.2024
- Shanghai: Presumably: September 23-27.2024
- Deliverables: November 2024

## T

**7.118 Course: Judgement 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](#)  
[M-WIWI-105714 - Consumer Research](#)  
[M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations](#)  
[M-WIWI-106258 - Digital Marketing](#)  
[M-WIWI-106410 - Economics & Management](#)

Type	Credits	Grading scale	Recurrence	Expansion	Version
Examination of another type	4,5	Grade to a third	Each winter term	1 terms	2

Events					
WT 24/25	2500041	<a href="#">Exercise Judgment and Decision Making</a>	2 SWS	Practice / 🌀	Scheibehenne
WT 24/25	2540440	<a href="#">Judgment and Decision Making</a>	3 SWS	Lecture / 🗣️	Scheibehenne
Exams					
ST 2024	7900001	<a href="#">Judgement and Decision Making</a>			Scheibehenne

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

**Competence Certificate**

Alternative exam assessment. The grading includes the following aspects:

- a written exam (60 minutes)
- a presentation during the exercise.

The scoring system for the grading will be announced at the beginning of the course.

**Prerequisites**

Registration via the CAMPUS Portal is required for participation in the Übung. The Übung is a prerequisite for the exam.

**Annotation**

The judgments and decisions that we make can have long ranging and important consequences for our (financial) well-being and individual health. Hence, the goal of this lecture is to gain a better understanding of how people make judgments and decisions and the factors that influences their behavior. We will look into simple heuristics and mental shortcuts that decision makers use to navigate their environment, in particular so in an economic context. Following this the lecture will provide an overview into social and emotional influences on decision making. In the second half of the semester we will look into some more specific topics including self-control, nudging, and food choice. The last part of the lecture will focus on risk communication and risk perception. We will address these questions from an interdisciplinary perspective at the intersection of Psychology, Behavioral Economics, Marketing, Cognitive Science, and Biology. Across all topics covered in class, we will engage with basic theoretical work as well as with groundbreaking empirical research and current scientific debates.

The workload of the class is 4.5 ECTS. This consists of 3 ETCS for the lecture and 1.5 ETCS for the Übung. Details about the Übung will be communicated at the first day of the class.

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

## V

**Judgment and Decision Making**

2540440, WS 24/25, 3 SWS, Language: English, [Open in study portal](#)

**Lecture (V)  
On-Site**

**Content**

In this lecture, students will be introduced to fundamental theories and key insights on human judgment and decision making. Topics include decision making under uncertainty, choice biases, simple heuristics, risk perception and -communication, as well as social and emotional influences on decision making, to name but a few. In the Wintersemester 20/21 this class will be held online. The lecture videos will be available for download and there will be regular online meetings to discuss the topics. The lecture will be held in English.

**Organizational issues**

**Eine Anmeldung zur Übung ist erforderlich.** (2500041 – Übung zur Vorlesung Judgment and Decision Making (WS 24/25)). Die Übung zur Vorlesung ist eine notwendige Voraussetzung, um die Klausur zu schreiben. Die Plätze sind begrenzt.

**Die Vorlesung findet Montags von 11:30 Uhr bis 13 Uhr in Raum 221 statt.**

**Registration for the *Übung* is required in order to attend the lecture and take the exam** (2500041 – *Übung* for the lecture Judgment and Decision Making (Winter Semester 24/25)). Participation is limited.

**The lecture takes place on Mondays from 11:30 AM to 1:00 PM in Room 221.**



T

**7.119 Course: KD<sup>2</sup>Lab 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-104080 - Designing Interactive Information Systems](#)  
[M-WIWI-105714 - Consumer Research](#)  
[M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations](#)

Type	Credits	Grading scale	Recurrence	Expansion	Version
Examination of another type	4,5	Grade to a third	Irregular	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**

The number of participants is limited due to laboratory capacity and to ensure optimal supervision of the project groups. Places are allocated on the basis of preferences and suitability for the topics. Previous knowledge in the field of experimental economic research is particularly important.


The course cannot be offered in the summer semester 2024.





T

**7.120 Course: Knowledge Discovery [T-WIWI-102666]**

**Responsible:** Dr.-Ing. Tobias Käfer  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)  
[M-WIWI-105880 - Informatics & Machine Learning](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	see Annotations	3

Events					
WT 24/25	2511303	<a href="#">Knowledge Discovery, Graph Neural Networks, and Language Models</a>	3 SWS	Lecture / Practice ( /  )	Käfer, Shao, Noullet

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

**Competence Certificate**

The examination will be offered for the last time in the winter semester 2024/2025. The last examination opportunity (only for repeaters) will take place in the summer semester 2025.

Instead of a final written exam, the record of achievement will be measured via project work, exercise assignments, and presentations. Specifically, the students will collaborate in groups of 3-4 to complete a comprehensive project which included a project proposal, mid-term report, and final report, cumulatively contributing 50% to their overall grade. Additionally, students will showcase their understanding of course material through the timely submission of three short assignments (totaling 25% of their grade). During the course, students will showcase their proficiency in public speaking and critical analysis by delivering engaging class presentations and discussions (25% of the grade).

**Prerequisites**

None

**Annotation**

The course will no longer be offered from winter semester 2024/2025.

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

V

**Knowledge Discovery, Graph Neural Networks, and Language Models** Lecture / Practice (VÜ)  
 2511303, WS 24/25, 3 SWS, Language: English, [Open in study portal](#) Blended (On-Site/Online)

**Content**

The lecture provides a comprehensive overview of various approaches in machine learning and data mining for knowledge extraction. It explores multiple fields, including machine learning, natural language processing, and knowledge representation. The main focus is on discovering patterns and regularities in extensive data sets, particularly unstructured text found in news articles, publications, and social media. This process is known as knowledge discovery. The lecture delves into specific techniques, methods, challenges, as well as current and future research topics within this field.

One part of the lecture is dedicated to understanding large language models (LLMs), such as ChatGPT, by exploring their underlying principles, training methods, and applications. Additionally, the lecture dives into graph representation learning, which involves extracting meaningful representations from graph data. It covers the mathematical foundations of graph and geometric deep learning, highlighting the latest applications in areas like explainable recommender systems.

Moreover, the lecture highlights the integration of knowledge graphs with large language models, known as neurosymbolic AI. This integration aims to combine structured and unstructured data to enhance knowledge extraction and representation.

The content of the lecture encompasses the entire machine learning and data mining process. It covers topics on supervised and unsupervised learning techniques, as well as empirical evaluation. Various learning methods are explored, ranging from classical approaches like decision trees, support vector machines, and neural networks to more recent advancements such as graph neural networks.

**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

T

## 7.121 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](#)  
[M-WIWI-106412 - Computation & Optimization](#)

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

Events					
ST 2024	2550475	<a href="#">Large-Scale Optimization</a>	2 SWS	Lecture / 📺	Rebennack
ST 2024	2550476	<a href="#">Übung zu Large-Scale Optimization</a>	1 SWS	Practice / 🎧	Bijiga, Rebennack
ST 2024	2550477	<a href="#">Rechnerübung zu Large-scale Optimization</a>	2 SWS	Others (sons)	Rebennack, Bijiga
Exams					
ST 2024	7900291	<a href="#">Large-scale Optimization</a>			Rebennack
WT 24/25	7900244	<a href="#">Large-scale Optimization</a>			Rebennack

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

**Competence Certificate**

The assessment consists of a written exam (60 minutes). The exam takes place in every semester.

**Prerequisites**

None.

T

**7.122 Course: Leadership and Innovation [T-WIWI-113716]**

**Responsible:** Eva Schulz-Kamm  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101507 - Innovation Management](#)  
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each summer term	1

**Competence Certificate**

Non exam assessment consisting of a presentation of the results and a seminar paper (written in the group).  
 The grade is composed of 70% of the grade for the written work and 30% of the grade for the presentation.

**Prerequisites**

None

**Recommendation**

Prior attendance of the course Innovation Management is recommended.

T

**7.123 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](#)  
[M-WIWI-106410 - Economics & Management](#)

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

Events					
WT 24/25	2581998	<a href="#">Liberalised Power Markets</a>	2 SWS	Lecture / 🗣️	Fichtner
WT 24/25	2581999	<a href="#">Übungen zu Liberalised Power Markets</a>	2 SWS	Practice / 🗣️	Signer, Fichtner, Beranek
Exams					
ST 2024	7900205	<a href="#">Liberalised Power Markets NEW</a>			Fichtner
ST 2024	7900253	<a href="#">Liberalised Power Markets</a>			Fichtner

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

**Competence Certificate**

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

**Recommendation**

None

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

V

**Liberalised Power Markets**

2581998, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**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

**7.124 Course: Life Cycle Assessment – Basics and Application Possibilities in an Industrial Context [T-WIWI-113107]**

**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	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each winter term	1

Events					
WT 24/25	2581995	<a href="#">Life Cycle Assessment - Basics and Application Possibilities in an Industrial Context</a>	2 SWS	Lecture / 🎧	Treml, Schultmann, Schneider
Exams					
ST 2024	7981995	<a href="#">Life Cycle Assessment - Basics and Application Possibilities in an Industrial Context</a>			Schultmann

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

**Competence Certificate**

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

**Prerequisites**

None.

**Recommendation**

None

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

V

**Life Cycle Assessment - Basics and Application Possibilities in an Industrial Context**

Lecture (V)  
On-Site

2581995, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Content**

The lecture focuses on the analysis of the environmental impacts of products and processes using Life Cycle Assessment (short: LCA). Structure and steps are conveyed in detail and selected further developments are shown. In order to record the methodology and classify potential environmental impacts, the practical development of what has been learned is also focused on using LCA software and interactive formats.

Topics include:

- Significance and areas of application
- Calculation models
- Attributional/Consequential LCA
- Life Cycle Sustainability Assessment, Social LCA and Life Cycle Costing
- Limitations
- Development of a Case Study

**Literature**

werden in der Veranstaltung bekannt gegeben



**7.125 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-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)  
[M-WIWI-105880 - Informatics & Machine Learning](#)

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

Events					
WT 24/25	2511500	<a href="#">Machine Learning 1 - Fundamental Methods</a>	2 SWS	Lecture /	Zöllner
WT 24/25	2511501	<a href="#">Exercises to Machine Learning 1 - Fundamental Methods</a>	1 SWS	Practice /	Zöllner, Polley, Fechner, Daaboul
Exams					
ST 2024	79AIFB_ML1_C4	<a href="#">Machine Learning 1 - Basic Methods (Registration until 15 July 2024)</a>			Zöllner
WT 24/25	79AIFB_ML1_C5	<a href="#">Machine Learning 1 - Basic Methods</a>			Zöllner

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

**Competence Certificate**

Depending on further pandemic developments, the exam will be offered either as an open-book exam, or as a written exam (60 min):

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

A grade bonus can be earned by successfully completing practice exercises. If the grade of the written exam 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.

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

**Machine Learning 1 - Fundamental Methods**

2511500, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
On-Site

**Content**

The course prepares students for the rapidly evolving field of machine learning by providing a solid foundation, covering core concepts and techniques to get started in the field. Students delve into different methods in supervised, unsupervised, and reinforcement learning, as well as various model types, ranging from basic linear classifiers to more complex methods, such as deep neural networks. Topics include general learning theory, support vector machines, decision trees, neural network fundamentals, convolutional neural networks, recurrent neural networks, unsupervised learning, reinforcement learning, and Bayesian learning.

The course is accompanied by a corresponding exercise, where students gain hands-on experience by implementing and experimenting with different machine learning algorithms, helping them to apply machine learning algorithms on real world problems.

By the end of the course, students will have acquired a solid foundation in machine learning, enabling them to apply state-of-the-art algorithms to solve complex problems, contribute to research efforts, and explore advanced topics in the field.

**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**

- Machine Learning - Tom Mitchell
- Deep Learning - Ian Goodfellow, Yoshua Bengio, Aaron Courville
- Pattern Recognition and Machine Learning - Christopher M. Bishop
- Artificial Intelligence: A Modern Approach - Peter Norvig and Stuart J. Russell
- Reinforcement Learning: An Introduction - Richard S. Sutton and Andrew G. Barto

**Weitere (spezifische) Literatur zu einzelnen Themen wird in der Vorlesung angegeben.**

**7.126 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-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)  
[M-WIWI-101637 - Analytics and Statistics](#)  
[M-WIWI-105880 - Informatics & Machine Learning](#)

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

Events					
ST 2024	2511502	<a href="#">Machine Learning 2 - Advanced methods</a>	2 SWS	Lecture /	Zöllner, Fechner, Polley
ST 2024	2511503	<a href="#">Exercises for Machine Learning 2 - Advanced Methods</a>	1 SWS	Practice /	Zöllner, Fechner, Polley
Exams					
ST 2024	79AIFB_ML2_B1	<a href="#">Machine Learning 2 – Advanced Methods (Registration until 15 July 2024)</a>			Zöllner
WT 24/25	79AIFB_ML2_B8	<a href="#">Machine Learning 2 – Advanced Methods</a>			Zöllner

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

**Competence Certificate**

Depending on further pandemic developments, the exam will be offered either as an open-book exam, or as a written exam (60 min).

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

**Prerequisites**

None.

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

**Machine Learning 2 - Advanced methods**

2511502, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**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 modern advanced methods of machine learning such as semi-supervised, self-supervised and active learning, deep neural networks (deep learning, CNNs, GANs, diffusion models, transformer, adversarial attacks) and hierarchical approaches, e.g. reinforcement learning. 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 (vehicles, 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**

- Deep Learning - Ian Goodfellow
- 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

## 7.127 Course: Machine Learning and Optimization in Energy Systems [T-WIWI-113073]

**Responsible:** Prof. Dr. Wolf Fichtner  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101452 - Energy Economics and Technology](#)

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

Events					
WT 24/25	2581050	<a href="#">Machine Learning and Optimization in Energy Systems</a>	3 SWS	Lecture / Practice ( / )	Dengiz, Yilmaz
Exams					
ST 2024	7900207	<a href="#">Machine Learning and Optimization in Energy Systems</a>			Fichtner

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

### Competence Certificate

The assessment of this course is a written examination (60 min) or an oral exam (30 min) depending on the number of participants. A bonus can be acquired through successful participation in the computer exercise. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the exercises.

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

V

### Machine Learning and Optimization in Energy Systems

2581050, WS 24/25, 3 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)  
On-Site

### Content

#### Goals:

Participants should know about the most common optimization and machine learning approaches for the application in energy systems. They should understand the basic principles of the methods and should be able to apply them for solving important problems of future energy systems with high shares of renewable energy sources.

#### Content:

In the beginning, the essential transition of the energy system into a smart grid and the need for methods from the field of optimization and machine learning are explained. The course can be subdivided into an optimization part and a larger machine learning part. In the optimization part, the basics of optimization approaches that are used in energy systems are shown. Further, heuristic methods and approaches from the field of multiobjective optimization are introduced. In the machine learning part, the most important methods from the field of unsupervised learning, supervised learning and reinforcement learning are introduced and their application in future energy systems are investigated.

Amongst the considered applications are power plant dispatch, intelligent heating with heat pumps, charging strategies for electric vehicles, clustering of energy data for energy system models and electricity demand and renewable generation forecasting.

We also offer a voluntary computer exercise that deepens the understanding of the methods and applications covered in the lecture. The students will have the opportunity to solve problems from the energy domain by using optimization and machine learning approaches implemented in the programming language Python.

The course's general focus is on the application of the methods in the energy field and not on the mathematical details of the different approaches.

The total workload for this course is approximately 105 hours:

- Attendance: 30 hours
- Self-study: 30 hours
- Exam preparation: 45 hours

T

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

Events					
ST 2024	2579900	<a href="#">Management Accounting 1</a>	2 SWS	Lecture / 📺	Wouters
ST 2024	2579901	<a href="#">Tutorial Management Accounting 1 (Bachelor)</a>	2 SWS	Practice / 🎧	Dickemann
ST 2024	2579902	<a href="#">Tutorial Management Accounting 1 (Master)</a>	2 SWS	Practice / 🎧	Dickemann
Exams					
ST 2024	79-2579900-B	<a href="#">Management Accounting 1 (Bachelor)</a>	Wouters		
ST 2024	79-2579900-M	<a href="#">Management Accounting 1 (Mastervorzug und Master)</a>	Wouters		

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

**Competence Certificate**

The assessment consists of a written exam (120 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

**Recommendation**

We recommend that you take part in our exercise for the lecture.

**Annotation**

The exercise is offered separately for Bachelor's students as well as for students in the Master's transfer and Master's program.

Note for exam registration:

- Bachelor students: 79-2579900-B Management Accounting 1 (Bachelor)
- Students in the Master's transfer and Master's program: 79-2579900-M Management Accounting 1 (Master's transfer and Master)

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

V

**Management Accounting 1**

2579900, SS 2024, 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 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.

**Tutorial Management Accounting 1 (Bachelor)**

2579901, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Practice (Ü)  
On-Site**

**Content**

see Module Handbook

**Tutorial Management Accounting 1 (Master)**

2579902, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Practice (Ü)  
On-Site**

**Content**

see Module Handbook

T

**7.129 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	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	2

Events					
WT 24/25	2579903	<a href="#">Management Accounting 2</a>	2 SWS	Lecture / 📺	Wouters
WT 24/25	2579904	<a href="#">Tutorial Management Accounting 2 (Bachelor)</a>	2 SWS	Practice / 🎧	Letmathe
WT 24/25	2579905	<a href="#">Tutorial Management Accounting 2 (Master)</a>	2 SWS	Practice / 🎧	Letmathe
Exams					
ST 2024	79-2579903-B	<a href="#">Management Accounting 2 (Bachelor)</a>	Wouters		
ST 2024	79-2579903-M	<a href="#">Management Accounting 2 (Mastervorzug und Master)</a>	Wouters		
ST 2024	79-2579903-M-mdlPr	<a href="#">Management Accounting 2 (Master)</a>	Wouters		

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

**Competence Certificate**

The assessment consists of a written exam (120 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

**Prerequisites**

None

**Recommendation**

It is recommended:

- to take part in the course "Management Accounting1" before this course
- participation in the exercise for the lecture "Management Accounting 2"

**Annotation**

The exercise for the lecture is offered separately for Bachelor's students as well as for students in the Master's transfer and Master's program.

Note for exam registration: Bachelor students:

- 79-2579903-B Management Accounting 2 (Bachelor)
- Students in the Master's transfer and Master's program: 79-2579903-M Management Accounting 2 (Master's transfer and Master)

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

V

**Management Accounting 2**

2579903, WS 24/25, 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.

**Tutorial Management Accounting 2 (Bachelor)**

2579904, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Practice (Ü)  
On-Site**

**Content**  
see ILIAS

**Tutorial Management Accounting 2 (Master)**

2579905, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Practice (Ü)  
On-Site**

**Content**  
see ILIAS

T

**7.130 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	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	see Annotations	2

Events					
ST 2024	2545003	<a href="#">Managing New Technologies</a>	2 SWS	Lecture /	Reiß
Exams					
ST 2024	7900169	<a href="#">Managing New Technologies</a>			Reiß

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

**Competence Certificate**

Success is assessed in the form of a written examination (60 minutes).

**Prerequisites**

None

**Recommendation**

None

**Annotation**

The course is expected to be offered for the last time in the summer semester 2024.

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

V

**Managing New Technologies**

2545003, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**Content**

This lecture provides an overview of new technologies in the research areas of biotechnology, nanotechnology and neuroscience as well as basic concepts of technology management. Students should be able to present problems of technology assessment and early recognition of new technologies in a structured way and apply formal approaches to technology management issues in an appropriate manner.

**Organizational issues**

Bitte melden Sie sich für die Prüfung Nr. 7900169 an, das ist die Prüfungs-Nr. für die schriftliche Prüfung.

(Die Prüfungs-Nr. 7900235 ist eine mündliche Prüfung, zu der sich Studierende nur nach Aufforderung durch das EnTechnon Sekretariat anmelden sollen, wenn Studierende eine mündliche Prüfung haben.)

**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

**7.131 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-106413 - Digitalization & Society](#)

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

Events					
ST 2024	2540460	<a href="#">Platform &amp; Market Engineering: Commerce, Media, and Digital Democracy</a>	2 SWS	Lecture / 🗎	Weinhardt, Fegert
ST 2024	2540461	<a href="#">Übungen zu Platform &amp; Market Engineering: Commerce, Media, and Digital Democracy</a>	1 SWS	Practice / 🗎	Fegert, Stano
Exams					
ST 2024	7979235	<a href="#">Platform &amp; Market Engineering: Commerce, Media, and Digital Democracy</a>			Weinhardt

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

**Competence Certificate**

The assessment consists of a written exam (60 min) (according to §4(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

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-112823 - Platform & Market Engineering: Commerce, Media, and Digital Democracy](#) must not have been started.

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

V

**Platform & Market Engineering: Commerce, Media, and Digital Democracy**

2540460, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
On-Site

**Organizational issues**

ehemals: "**Market Engineering: Information in Institutions**"

**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

## 7.132 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](#)  
[M-WIWI-105714 - Consumer Research](#)  
[M-WIWI-106258 - Digital Marketing](#)  
[M-WIWI-106410 - Economics & Management](#)

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

Events					
ST 2024	2571150	<a href="#">Market Research</a>	2 SWS	Lecture / 🗣️	Klarmann
ST 2024	2571151	<a href="#">Market Research Tutorial</a>	1 SWS	Practice / 🗣️	Klarmann
Exams					
ST 2024	7900015	<a href="#">Market Research</a>			Klarmann

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

**Competence Certificate**

The assessment of success takes place through a written exam (70 minutes) with additional aids in the sense of an open book exam. Further details will be announced during the lecture.

**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 2024, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**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 is carried out (according to §4(2), 3 SPO) in the form of a written open book exam.

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

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

Events					
WT 24/25	2572170	<a href="#">Marketing Analytics</a>	2 SWS	Lecture / 🗎	Klarmann
WT 24/25	2572171		1 SWS	Practice / 🗎	Martin

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

**Competence Certificate**

Alternative (according to §4(2), 3 of the examination regulation) 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".

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-107720 - Market Research](#) must have been passed.

**Recommendation**

It is strongly recommended to complete the course "Market Research" prior to taking the "Marketing Analytics" course.

**Annotation**

"Marketing Analytics" is offered as a block course with an alternative exam assessment.

Starting in the winter semester 22/23, the course will be scheduled to be completed after two thirds of the semester. For further information, please contact the Marketing and Sales Research Group ([marketing.iism.kit.edu](mailto: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 and Sales Research Group.

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

V

**Marketing Analytics**

2572170, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**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 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](mailto:marketing.iism.kit.edu)).

**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.

V

2572171, WS 24/25, 1 SWS, Language: English, [Open in study portal](#)**Practice (Ü)  
On-Site****Content**

Tasks parallel to the lecture to work on in a group of students.

**Organizational issues**

Blockveranstaltung: genaue Uhrzeiten und Raum werden noch bekannt gegeben

T

**7.134 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](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	1,5	Grade to a third	Irregular	1

**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](http://marketing.iism.kit.edu)) shortly before the lecture period in summer term starts.



T

**7.135 Course: Master's Thesis [T-WIWI-113003]**

**Responsible:** Studiendekan des KIT-Studienganges  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-106420 - Module Master's Thesis](#)

Type	Credits	Grading scale	Version
Final Thesis	30	Grade to a third	1

**Competence Certificate**

see module description

**Prerequisites**

see module description

**Final Thesis**

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

<b>Submission deadline</b>	6 months
<b>Maximum extension period</b>	3 months
<b>Correction period</b>	8 weeks

T

**7.136 Course: Matching Theory [T-WIWI-113264]**

**Responsible:** Prof. Dr. Clemens Puppe  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101500 - Microeconomic Theory](#)

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

Events					
WT 24/25	2500042	<a href="#">Matching Theory</a>	3 SWS	Lecture / Practice ( / )	Okulicz
Exams					
ST 2024	7900260	<a href="#">Matching Theory</a>			Puppe

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

**Competence Certificate**

Written examination (90 minutes)

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

V

**Matching Theory**

2500042, WS 24/25, 3 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)  
On-Site

**Content**

How should we organize recruitment of students to schools? Could we improve the placement of doctors to hospitals? Why there always seems to be a better roommate to the one you currently have? Matching Theory answers all these questions and more. During the course we will formally study mathematical systems of allocating goods and people, and see their many real life applications from organizing kidney exchange to improving dating apps. The course will cover three main topics in Matching Theory and Market Design: (1) assignment problems (e.g., allocation of social housing), (2) two-sided matching (e.g., allocation of children to schools), (3) transferable-utility matching (e.g., labor market).

The students are expected to:

1. Understand the mathematical properties of allocations and commonly used mechanism
2. Understand the connection between Matching Theory and real-life allocation systems
3. Be able to use their knowledge to propose solutions for novel real-life problems

T

**7.137 Course: Mathematics for High Dimensional Statistics [T-WIWI-111247]**

**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-103289 - Stochastic Optimization](#)  
[M-WIWI-106411 - Statistics & Econometrics](#)

Type	Credits	Grading scale	Recurrence	Version
Oral examination	4,5	Grade to a third	Irregular	1

Exams			
ST 2024	7900362	<a href="#">Mathematics for High Dimensional Statistics</a>	Grothe

**Competence Certificate**

The assessment consists of an oral exam (approx. 30 min.) taking place in the recess period.

**Prerequisites**

None

**Recommendation**

Basic knowledge of mathematics and statistics is assumed.

Knowledge in multivariate statistics is an advantage, but not necessary for the course.

**Annotation**

Teaching and learning format: Lecture and exercise

T

**7.138 Course: Media Management [T-WIWI-112711]**

**Responsible:** Prof. Dr. Ann-Kristin Kupfer  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-106258 - Digital Marketing](#)

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

Events					
WT 24/25	2572192	<a href="#">Media Management</a>	2 SWS	Lecture / 🗎	Kupfer
WT 24/25	2572193	<a href="#">Media Management Exercise</a>	1 SWS	Practice / 🗎	Mitarbeiter

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

**Competence Certificate**

The control of success is done by the elaboration and presentation of a group task as well as a written exam. Further details on the design of the performance review will be announced during the lecture.

**Prerequisites**

None

**Recommendation**

Students are highly encouraged to actively participate in class.

**Annotation**

The course will take place in the winter term 23/24 for the first time.

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

V

**Media Management**

2572192, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)  
On-Site**

**Content**

Students learn the theoretical foundations of media management and its most important concepts. They learn both about the key characteristics of both media products and media markets. They further get to know essential business models of media markets. Special emphasis will be given to understanding media consumers and the marketing mix of media products. A tutorial offers the opportunity to apply the key learnings of the lecture.

The learning objectives are as follows:

- Getting to know the theoretical foundations of media management
- Evaluating strategies for media products and services as media-specific marketing mix instruments
- Fostering critical and analytical thinking skills and the application of knowledge to marketing problems
- Improvement of skills and competences in the area of project management within the framework of group work
- Improvement of foreign language skills (business English)

Total time required for 4.5 credit points: approx. 135 hours

Attendance time: 30 hours

Self-study: 105 hours

**Organizational issues**

Appointments to be announced.

**7.139 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	Grading scale	Recurrence	Version
Examination of another type	1,5	Grade to a third	Each summer term	2

Events					
ST 2024	2560240	<a href="#">Methods in Economic Dynamics</a>	1 SWS	Lecture /	Ott
Exams					
ST 2024	7900108	<a href="#">Methods in Economic Dynamics</a>			Ott

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

**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 2024, 1 SWS, Language: German/English, [Open in study portal](#)

**Lecture (V)  
On-Site**

**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).

**Organizational issues**

The course is structured along two assignments, the first of which is an individual assignment, whereas the second assignment is a group project. Assignment 1 will be completed within one month's time, whereas assignment 2 will take place on a different date.

**Assignment 1** will take place on **24.04.2024** in **Building 01.87, B5.25**. **Assignment 2** will take place on **10.07.2024** in **Building 01.87, B5.25**. The exact time will be announced later.

Students are offered the opportunity to participate in this course jointly with the course "Seminar in Economic Policy", within the module "Economics of Innovation". The work in both courses will be strongly related to each other, as students will work on the same topic from two different perspectives. Students in the course "Seminar in Economic Policy" will be provided with the opportunity to write a paper that addresses the results found by the students in the course "Methods in Economic Dynamics". Taking both courses together will enable the students to earn 4.5 ECTS.

**Literature**

Relevante Literatur wird in der Vorlesung bekanntgegeben.  
(Relevant literature will be announced in the lecture.)

T

**7.140 Course: Methods in Innovation Management [T-WIWI-110263]**

**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	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Irregular	1

**Competence Certificate**

The assessment is an alternative exam assessment consisting of a presentation (25%) and a written paper (75%). The points system for the assessment is determined by the lecturer of the course. It will be announced at the beginning of the course.

**Prerequisites**

None.

**Recommendation**

Prior attendance of the course "Innovation Management: Concepts, Strategies and Methods" is recommended.

**Annotation**

Teaching and learning format: Seminar

T

## 7.141 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](#)  
[M-WIWI-106412 - Computation & Optimization](#)

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

Events					
ST 2024	2550140	<a href="#">Mixed-integer Programming II</a>	2 SWS	Lecture /	Stein
Exams					
ST 2024	7900014_SS2024_NK	<a href="#">Mixed Integer Programming I</a>			Stein

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

**Competence Certificate**

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

The examination is held in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of *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.iior.kit.edu](http://kop.iior.kit.edu)).

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

V

**Mixed-integer Programming II**

2550140, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
On-Site



**Content**

Many optimization problems from economics, engineering and natural sciences are modeled with continuous as well as with discrete variables. Examples are the energy minimal design of a chemical process in which several reactors may be switched on or off, portfolio optimization with limitations on the number of securities, the choice of locations to serve customers at minimum cost, and the optimal design of vote allocations in election procedures. For the algorithmic identification of optimal points of such problems an interaction of ideas from discrete as well as continuous optimization is necessary.

The lecture focusses on mixed-integer *nonlinear* optimization problems and is structured as follows:

- Continuous relaxation and error bounds for roundings
- Branch-and-Bound for convex and nonconvex problems
- Generalized Benders decomposition
- Outer approximation methods
- Lagrange relaxation
- Dantzig-Wolfe decomposition
- Heuristics

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 mixed-integer *linear* optimization problems forms the contents of the lecture "Mixed-integer Programming I".

**Learning objectives:**

The student

- knows and understands the fundamentals of nonlinear mixed integer programming,
- is able to choose, design and apply modern techniques of nonlinear mixed integer programming in practice.

**Literature**

- C.A. Floudas, Nonlinear and Mixed-Integer Optimization: Fundamentals and Applications, Oxford University Press, 1995
- J. Kallrath: Gemischt-ganzzahlige Optimierung, Vieweg, 2002
- D. Li, X. Sun: Nonlinear Integer Programming, Springer, 2006
- G.L. Nemhauser, L.A. Wolsey, Integer and Combinatorial Optimization, Wiley, 1988
- M. Tawarmalani, N.V. Sahinidis, Convexification and Global Optimization in Continuous and Mixed-Integer Nonlinear Programming, Kluwer, 2002.

## T

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

Events					
ST 2024	2550140	<a href="#">Mixed-integer Programming II</a>	2 SWS	Lecture /	Stein
ST 2024	2550141	<a href="#">Exercise to Mixed-integer Programming II</a>	1 SWS	Practice /	Stein, Schwarze
Exams					
ST 2024	7900009_SS2024_HK	<a href="#">Mixed Integer Programming II</a>			Stein

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

**Competence Certificate**

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

The examination is held in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of *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.iior.kit.edu](http://kop.iior.kit.edu)).

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

## V

**Mixed-integer Programming II**

2550140, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**Content**

Many optimization problems from economics, engineering and natural sciences are modeled with continuous as well as with discrete variables. Examples are the energy minimal design of a chemical process in which several reactors may be switched on or off, portfolio optimization with limitations on the number of securities, the choice of locations to serve customers at minimum cost, and the optimal design of vote allocations in election procedures. For the algorithmic identification of optimal points of such problems an interaction of ideas from discrete as well as continuous optimization is necessary.

The lecture focusses on mixed-integer *nonlinear* optimization problems and is structured as follows:

- Continuous relaxation and error bounds for roundings
- Branch-and-Bound for convex and nonconvex problems
- Generalized Benders decomposition
- Outer approximation methods
- Lagrange relaxation
- Dantzig-Wolfe decomposition
- Heuristics

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 mixed-integer *linear* optimization problems forms the contents of the lecture "Mixed-integer Programming I".

**Learning objectives:**

The student

- knows and understands the fundamentals of nonlinear mixed integer programming,
- is able to choose, design and apply modern techniques of nonlinear mixed integer programming in practice.

**Literature**


- C.A. Floudas, Nonlinear and Mixed-Integer Optimization: Fundamentals and Applications, Oxford University Press, 1995
- J. Kallrath: Gemischt-ganzzahlige Optimierung, Vieweg, 2002
- D. Li, X. Sun: Nonlinear Integer Programming, Springer, 2006
- G.L. Nemhauser, L.A. Wolsey, Integer and Combinatorial Optimization, Wiley, 1988
- M. Tawarmalani, N.V. Sahinidis, Convexification and Global Optimization in Continuous and Mixed-Integer Nonlinear Programming, Kluwer, 2002.





T

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

Events					
WT 24/25	2550490	<a href="#">Modellieren und OR-Software: Fortgeschrittene Themen</a>	3 SWS	Practical course / 	Pomes, Linner, Nickel
Exams					
ST 2024	7900188	<a href="#">Modeling and OR-Software: Advanced Topics</a>			Nickel
WT 24/25	7900071	<a href="#">Modeling and OR-Software: Advanced Topics</a>			Nickel

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

**Competence Certificate**

The assessment is a written examination. The examination is held in every semester. The prerequisite can only be obtained in semesters in which the course exercises are offered.

**Prerequisites**

Prerequisite for admission to the exam is the successful participation in the exercises. This includes the processing and presentation of exercises.

**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 the limited number of participants, please register in advance. Further information can be found on the website of the course. Registration in WS 24/25 takes place via the Wiwi-Portal: <https://portal.wiwi.kit.edu/ys/8209>.

The course is offered every semester. The range of courses planned for three academic years in advance can be found on the Internet.

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

V

**Modellieren und OR-Software: Fortgeschrittene Themen**

2550490, WS 24/25, 3 SWS, Language: German, [Open in study portal](#)

**Practical course (P)**  
**Blended (On-Site/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**

Link zur Bewerbung:

[http://go.wiwi.kit.edu/OR\\_Bewerbung](http://go.wiwi.kit.edu/OR_Bewerbung)

Bewerberzeitraum:

01.09.2023 00:00 - 12.10.2023 23:55

T

**7.144 Course: Modeling and Simulation [T-WIWI-112685]**

**Responsible:** Prof. Dr. Sanja Lazarova-Molnar  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Events					
ST 2024	2511100	<a href="#">Modeling and Simulation</a>	2 SWS	Lecture	Lazarova-Molnar
ST 2024	2511101	<a href="#">Exercises Modeling and Simulation</a>	1 SWS	Practice	Lazarova-Molnar
Exams					
ST 2024	79AIFB_MaS_C6	<a href="#">Modeling and Simulation (Registration until 15 July 2024)</a>			Lazarova-Molnar
WT 24/25	79AIFB_MaS_A6	<a href="#">Modeling and Simulation</a>			Lazarova-Molnar

**Competence Certificate**

Depending on the number of participants in the course, the exam will be offered either as an oral exam (20 min), or as a written exam (60 min).

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

**Prerequisites**

None

**Recommendation**

Some experience in programming and knowledge of basic mathematics and statistics.

**Annotation**

Instruction is in the form of lectures and exercises. A detailed course schedule will be published before the start of the semester.

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

V

**Modeling and Simulation**

2511100, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**

**Content**

Modeling and Simulation is the most widely used operations research / systems engineering technique for designing new systems and optimizing the performance of existing systems. In one way or another, just about every engineering or scientific field uses simulation as an exploration, modeling, or analysis technique. The course is designed to provide students with basic knowledge of modeling and simulation approaches and to provide them with first experience of using a simulation package. The course will focus on modeling and simulation of real-world discrete event systems. Examples of discrete events are customer arrivals at a queue of a service desk, machine failures in manufacturing systems, telephone calls in a call center, etc. Moreover, continuous and hybrid models will be also discussed. Topics include Discrete-Event Simulation, Input Modeling, Output Analysis, Random Number Generation, Verification and Validation, Stochastic Petri Nets and Markov Chains.

**Competence Certificate**

Depending on the number of participants in the course, the exam will be offered either as an oral exam (20 min), or as a written exam (60 min).

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

**Learning Objectives**

Knowledge:

- Demonstrate knowledge about general and specific theories, challenges, algorithms, methods, technologies, and tools related to modelling and simulation
- Demonstrate knowledge of two important classes of simulation:
  - Discrete-event Monte-Carlo simulation,
  - Continuous simulation with ODEs
- Demonstrate knowledge of algorithms necessary to build a simulator

Skills:

- Analyse suitability of an approach/tool for a given modelling problem
- Understand simulation models of various types
- Demonstrate methods and techniques to overcome common challenges in modelling and simulation
- Model simulation input data
- Analyse and model discrete stochastic systems
- Analyse and interpret simulation results

Competences:

- Use different methods to conduct simulation-based analysis of real-world data
- Build and simulate stochastic models
- Use simulation software

**Prerequisites**

Some experience in programming and knowledge of basic mathematics and statistics

**Form of instruction**

Lectures and exercises. A detailed course plan will be published before the semester start.

**Literature**

Discrete-Event System Simulation, 5th Edition

Jerry Banks, John S. Carson, II, Barry L. Nelson and David M. Nicol

T

**7.145 Course: Modeling the Dynamics of Financial Markets [T-WIWI-113414]**

**Responsible:** Prof. Dr. Maxim Ulrich  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-106660 - Modeling the Dynamics of Financial Markets](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	9	Grade to a third	Each summer term	1

Events				
ST 2024	2600004	<a href="#">Essentials for Dynamic Financial Machine Learning</a>		Lecture / Practice ( / Ulrich ✘
ST 2024	2600257	<a href="#">Dynamic Capital Market Theory</a>		Lecture / Practice ( / Ulrich ✘
Exams				
ST 2024	7900332	<a href="#">Modeling the Dynamics of Financial Markets</a>		Ulrich
WT 24/25	7900024	<a href="#">Modeling the Dynamics of Financial Markets</a>		Ulrich

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

**Competence Certificate**

The examination takes the form of a one-hour written comprehensive examination on the courses "Dynamic Capital Market Theory", "Essentials for Dynamic Financial Machine Learning" and "Exercises, Python, Resesearch Frontier in Dynamic Capital Markets".

**Recommendation**

Recommendation: Knowledge in the fields of Advanced Statistics, Deep Learning, Financial Economics, Differential Equations, Optimization.

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

V

**Essentials for Dynamic Financial Machine Learning**

2600004, SS 2024, SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)  
Blended (On-Site/Online)

**Content**

This course teaches students to work with financial data. Students learn algorithms that are used to learn key quantities of dynamic capital markets, such as time-varying risk premia, volatility and unobserved state variables. The course covers the following concepts:

- \* Multivariate time series modeling
- \* Dynamic volatility modeling
- \* Handling big financial data
- \* Estimating risk premia
- \* Kalman Filtering

Lectures develop all material on the whiteboard. Tutoriums solve and discuss python solutions to selected problems.

V

**Dynamic Capital Market Theory**

2600257, SS 2024, SWS, [Open in study portal](#)

Lecture / Practice (VÜ)  
Blended (On-Site/Online)

**Content**

This course offers an introduction to the dynamics of capital markets. Portfolios and asset prices move dynamically across time. This course teaches state-of-the-art models to help understand why this is the case. Describing and managing dynamic systems in engineering is done via dynamic programming and optimal control. This course develops the theory of dynamic programming in continuous time and applies it to solve portfolio choice and corporate investment decisions. These concepts are key for financial engineering and model-based reinforcement learning.

Students obtain proficiency in the following topics:

- \* Dynamic Asset Pricing and Portfolio Choice Theory
- \* Dynamic modeling in discrete and continuous time
- \* Stochastic Calculus
- \* Theory of Dynamic Programming
- \* Pricing of bond, equity, futures and option markets

Lectures develop all concepts on the whiteboard, while exercises are solved during weekly tutorials.



**7.146 Course: Multicriteria Optimization [T-WIWI-111587]**

**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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	see Annotations	1

Events					
WT 24/25	2550155	<a href="#">Multicriteria Optimization</a>	2 SWS	Lecture /	Stein
WT 24/25	2550156	<a href="#">Exercises Multicriteria Optimization</a>		Practice /	Stein, Beck
Exams					
WT 24/25	7900009_WS2425_HK	<a href="#">Multicriteria Optimization</a>			Stein

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

**Competence Certificate**

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

**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 course is offered every second winter semester (starting WiSe 22/23). The curriculum of the next three years is available online ([www.ior.kit.edu](http://www.ior.kit.edu)).

**Contents:**

Multicriteria optimization deals with optimization problems with multiple objective functions. In practice, the minimization or maximization of several objectives often conflict with each other, such as weight and stability of mechanical components, return and risk of stock portfolios, or cost and duration of transports. Various scalarization approaches allow one to formulate single-objective problems that can be solved using nonlinear or global optimization techniques, and whose optimal points have a reasonable interpretation for the underlying multicriteria problem.

However, some seemingly obvious scalarization approaches suffer from various drawbacks, so that regardless of scalarization approaches, it is necessary to clarify what is meant by the solution of a multicriteria optimization problem in the first place. For such Pareto-optimal points, optimality conditions and solution procedures based on them can be formulated. From the usually non-unique Pareto set, decision makers finally choose an alternative based on their subjective preferences.

The lecture gives a mathematically sound introduction to multicriteria optimization and is structured as follows:

- Introductory examples and terminology
- Solution concepts
- Methods for the determination of the Pareto set
- Selection of Pareto-optimal points under subjective preferences

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

**Multicriteria Optimization**

2550155, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
On-Site

**Content**

Multicriteria optimization deals with optimization problems with multiple objective functions. In practice, the minimization or maximization of several objectives often conflict with each other, such as weight and stability of mechanical components, return and risk of stock portfolios, or cost and duration of transports. Various scalarization approaches allow one to formulate single-objective problems that can be solved using nonlinear or global optimization techniques, and whose optimal points have a reasonable interpretation for the underlying multicriteria problem.

However, some seemingly obvious scalarization approaches suffer from various drawbacks, so that regardless of scalarization approaches, it is necessary to clarify what is meant by the solution of a multicriteria optimization problem in the first place. For such Pareto-optimal points, optimality conditions and solution procedures based on them can be formulated. From the usually non-unique Pareto set, decision makers finally choose an alternative based on their subjective preferences.

The lecture gives a mathematically sound introduction to multicriteria optimization and is structured as follows:

- Introductory examples and terminology
- Solution concepts
- Methods for the determination of the Pareto set
- Selection of Pareto-optimal points under subjective preferences

**Learning objectives:**

The student

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

**Literature**



- M. Ehrgott, Multicriteria Optimization, Second Edition, Springer, Berlin, 2005
- J. Jahn, Vector Optimization, Second Edition, Springer, Berlin, 2011
- K. Miettinen, Nonlinear Multiobjective Optimization, Springer, New York, 2004
- Y. Sawaragi, H. Nakayama, T. Tanino, Theory of Multiobjective Optimization, Academic Press, Orlando, FL, 1985


T

**7.147 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](#)  
[M-WIWI-106411 - Statistics & Econometrics](#)

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

Events					
WT 24/25	2550554	<a href="#">Multivariate Verfahren</a>	2 SWS	Lecture / 	Grothe
WT 24/25	2550555	<a href="#">Practice Multivariate Statistical Methods</a>	2 SWS	Practice / 	Liu
Exams					
ST 2024	7900351	<a href="#">Multivariate Statistical Methods</a>			Grothe
WT 24/25	7900217	<a href="#">Multivariate Statistical Methods</a>			Grothe

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

**Competence Certificate**

Written examination lasting 60 minutes.

The examination is offered during the examination period of the lecture semester. Only repeaters (and not first-time writers) are admitted to the repeat examination in the examination period of the following semester.

**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.

**Annotation**



The course (lecture and exercise) is offered irregularly. Detailed information can be found on the chair's website.


T

**7.148 Course: Nature-Inspired Optimization Methods [T-WIWI-102679]**

**Responsible:** Prof. Dr. Pradyumn Kumar Shukla  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)  
[M-WIWI-106412 - Computation & Optimization](#)

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

Events					
ST 2024	2511106	<a href="#">Nature-Inspired Optimization Methods</a>	2 SWS	Lecture / 	Shukla
ST 2024	2511107	<a href="#">Übungen zu Nature-Inspired Optimization Methods</a>	1 SWS	Practice / 	Shukla
Exams					
ST 2024	79AIFB_NOM_C1	<a href="#">Nature-Inspired Optimization Methods (Registration until 15 July 2024)</a>			Shukla
WT 24/25	79AIFB_NOM_B5	<a href="#">Nature-Inspired Optimisation Methods</a>			Shukla

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

**Competence Certificate**

**Please note: no exam can be offered in the winter semester 2023/2024.**

**Prerequisites**

None

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

V

**Nature-Inspired Optimization Methods**

2511106, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

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

**Content**

Many optimization problems are too complex to be solved to optimality. A promising alternative is to use stochastic heuristics, based on some fundamental principles observed in nature. Examples include evolutionary algorithms, ant algorithms, or simulated annealing. These methods are widely applicable and have proven very powerful in practice. During the course, such optimization methods based on natural principles are presented, analyzed and compared. Since the algorithms are usually quite computational intensive, possibilities for parallelization are also investigated.

**Learning objectives:**

Students learn:

- Different nature-inspired methods: local search, simulated annealing, tabu search, evolutionary algorithms, ant colony optimization, particle swarm optimization
- Different aspects and limitation of the methods
- Applications of such methods
- Multi-objective optimization methods
- Constraint handling methods
- Different aspects in parallelization and computing platforms

**Literature**

\* E. L. Aarts and J. K. Lenstra: 'Local Search in Combinatorial Optimization'. Wiley, 1997 \* D. Corne and M. Dorigo and F. Glover: 'New Ideas in Optimization'. McGraw-Hill, 1999 \* C. Reeves: 'Modern Heuristic Techniques for Combinatorial Optimization'. McGraw-Hill, 1995 \* Z. Michalewicz, D. B. Fogel: 'How to solve it: Modern Heuristics'. Springer, 1999 \* E. Bonabeau, M. Dorigo, G. Theraulaz: 'Swarm Intelligence'. Oxford University Press, 1999 \* A. E. Eiben, J. E. Smith: 'Introduction to Evolutionary Computation'. \* M. Dorigo, T. Stützle: 'Ant Colony Optimization'. Bradford Book, 2004 Springer, 2003

T

**7.149 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](#)  
[M-WIWI-106411 - Statistics & Econometrics](#)

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

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

Events					
WT 24/25	2550111	<a href="#">Nonlinear Optimization I</a>	2 SWS	Lecture /	Stein
WT 24/25	2550112	<a href="#">Exercises Nonlinear Optimization I + II</a>		Practice /	Stein, Schwarze
Exams					
ST 2024	7900202_SS2024_NK	<a href="#">Nonlinear Optimization I</a>			Stein
WT 24/25	7900001_WS2425_HK	<a href="#">Nonlinear Optimization I</a>			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 successful completion of the exercises is required for admission to the written exam. The exam takes place in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of Nonlinear Optimization II [2550113]. In this case, the duration of the written examination takes 120 minutes.

**Prerequisites**

The module component exam T-WIWI-103637 "Nonlinear Optimization I and II" may not be selected.

**Annotation**

Part I and II of the lecture are held consecutively in the *same* semester.

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

**Nonlinear Optimization I**

2550111, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
On-Site

**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, 2. Aufl., SpringerSpektrum, 2021

**Weiterführende Literatur:**

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T

**7.151 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	Grading scale	Recurrence	Version
Written examination	9	Grade to a third	Each winter term	6

Events					
WT 24/25	2550111	<a href="#">Nonlinear Optimization I</a>	2 SWS	Lecture / 🗎	Stein
WT 24/25	2550112	<a href="#">Exercises Nonlinear Optimization I + II</a>		Practice / 🗎	Stein, Schwarze
WT 24/25	2550113	<a href="#">Nonlinear Optimization II</a>	2 SWS	Lecture / 🗎	Stein
Exams					
ST 2024	7900204_SS2024_NK	<a href="#">Nonlinear Optimization I and II</a>			Stein
WT 24/25	7900003_WS2425_HK	<a href="#">Nonlinear Optimization I and II</a>			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. The successful completion of the exercises is required for admission to the written exam.

The exam takes place in the semester of the lecture and in the following semester.

**Prerequisites**

None.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-102724 - Nonlinear Optimization I](#) must not have been started.
2. The course [T-WIWI-102725 - Nonlinear Optimization II](#) must not have been started.

**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 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
**On-Site**



**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, 2. Aufl., SpringerSpektrum, 2021

**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 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
On-Site**

**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, 2. Aufl., SpringerSpektrum, 2021

**Weiterführende Literatur:**

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T

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

Events					
WT 24/25	2550112	<a href="#">Exercises Nonlinear Optimization I + II</a>		Practice / 🗎	Stein, Schwarze
WT 24/25	2550113	<a href="#">Nonlinear Optimization II</a>	2 SWS	Lecture / 🗎	Stein
Exams					
ST 2024	7900203_SS2024_NK	<a href="#">Nonlinear Optimization II</a>			Stein
WT 24/25	7900002_WS2425_HK	<a href="#">Nonlinear Optimization II</a>			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 successful completion of the exercises is required for admission to the written exam.

The exam takes place in the semester of the lecture and in the following semester.

The exam can also be combined with the examination of *Nonlinear Optimization I* [2550111]. In this case, the duration of the written exam takes 120 minutes.

**Prerequisites**

None.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-103637 - Nonlinear Optimization I and II](#) must not have been started.

**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 II**

2550113, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
On-Site**

**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, 2. Aufl., SpringerSpektrum, 2021

**Weiterführende Literatur:**

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T

**7.153 Course: Online Concepts for Karlsruhe City Retailers [T-WIWI-111848]**

**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](#)  
[M-WIWI-106258 - Digital Marketing](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each summer term	2

Events					
ST 2024	2571184	<a href="#">Online concepts for Karlsruhe city retailers</a>	2 SWS	Others (sons / 🗨️)	Kupfer
Exams					
ST 2024	7900221	<a href="#">Online Concepts for Karlsruhe City Retailers</a>			Klarmann

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

**Competence Certificate**

Alternative exam assessment:

- presentations in teams (in each case to the extent of approx. 15 minutes per team with subsequent discussion)
- delivery of a written elaboration per team.

**Annotation**

Please note that an application is required to participate in this workshop. The application phase usually takes place at the beginning of the lecture period in the summer semester. More information on the application process is usually available on the Marketing and Sales Research Group website ([marketing.iism.kit.edu](http://marketing.iism.kit.edu)) shortly before the start of the lecture period in the summer semester.

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

V

**Online concepts for Karlsruhe city retailers**

2571184, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Others (sonst.)  
On-Site**

**Content****Content**

As part of a practical project in cooperation with the city marketing department of KME Karlsruhe Marketing und Event GmbH, students will have the opportunity to directly interact with retailers in Karlsruhe. Challenges of the digitalization of brick-and-mortar retailing will be analyzed and solutions will be developed and implemented.

In a theoretical part at the beginning of the event, students will gain an insight into the theoretical foundations of specific online marketing instruments. In cooperation with Karlsruhe City Marketing, students are taught application-oriented skills in online marketing tools, such as content management systems, social media platforms, search engine optimization or Google Ads campaigns.

In the practical part of the course, student teams cooperate with a real retailer in Karlsruhe's city center and learn how to analyze and optimize online presences and digital solutions based on key performance indicators. Possible use cases range from social media communication and website optimization to the introduction of innovative pricing and payment methods. In this way, students are given the tools for developing, maintaining and optimizing individual websites and digital solutions in stationary retailing.

Learning objectives result accordingly as follows:

- Learning of theoretical basics of central, application-oriented tools of online marketing
- Application and practical deep-dive of the acquired knowledge in a real case
- Concise and structured presentation of results

Total time required for 3 credit points: approx. 90.0 hours

Attendance time: 12 hours

Preparation and wrap-up of the course: 58 hours

Exam and exam preparation: 20 hours

T

**7.154 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**  
Written examination





**Credits**  
4,5

**Grading scale**  
Grade to a third

**Recurrence**  
Each term

**Version**  
3

Events					
ST 2024	2550495	<a href="#">Operations Research in Health Care Management</a>	2 SWS	Lecture / 	Graß
ST 2024	2550496	<a href="#">Übungen zu OR im Health Care Management</a>	1 SWS	Practice / 	Graß
WT 24/25	2550495	<a href="#">Operations Research in Health Care Management</a>	2 SWS	Lecture / 	Graß
WT 24/25	2550496	<a href="#">Übungen zu OR im Health Care Management</a>	1 SWS	Practice	Graß
Exams					
ST 2024	7900229	<a href="#">Operations Research in Health Care Management</a>			Graß
WT 24/25	7900010	<a href="#">Operations Research in Health Care Management</a>			Graß
WT 24/25	7900032	<a href="#">Operations Research in Health Care Management</a>			Graß

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

**Competence Certificate**

Success is assessed in the form of a 60-minute written examination (in accordance with §4(2), 1 SPO).

The examination is offered every semester.

**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 2024, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
Online

**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

V

**Operations Research in Health Care Management**

2550495, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
On-Site

**Literature**

**Elective literature:**

- Fleßa: Grundzüge der Krankenhausbetriebslehre, Oldenbourg, 2007
- Fleßa: Grundzüge der Krankenhaussteuerung, Oldenbourg, 2008
- Hall: Patient flow: reducing delay in healthcare delivery, Springer, 2006

T

## 7.155 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Irregular	2

Exams			
ST 2024	7900249	<a href="#">Operations Research in Supply Chain Management</a>	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 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>.

T

**7.156 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](#)  
[M-WIWI-106412 - Computation & Optimization](#)

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

Events					
WT 24/25	2550464	<a href="#">Optimization Under Uncertainty</a>	2 SWS	Lecture / 	Rebennack
WT 24/25	2550465	<a href="#">Übungen zu Optimierungsansätze unter Unsicherheit</a>	1 SWS	Practice / 	Rebennack
WT 24/25	2550466		2 SWS	Others (sons)	Rebennack
Exams					
ST 2024	7900309	<a href="#">Optimization under Uncertainty</a>			Rebennack
WT 24/25	7900240	<a href="#">Optimization under Uncertainty</a>			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.



## T 7.157 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](#)  
[M-WIWI-106411 - Statistics & Econometrics](#)

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

Events					
ST 2024	2520320	<a href="#">Panel Data</a>	2 SWS	Lecture	Heller
ST 2024	2520321	<a href="#">Übungen zu Paneldaten</a>	2 SWS	Practice	Heller
Exams					
ST 2024	7900115	<a href="#">Panel Data</a>			Heller

### Competence Certificate

The performance assessment is an alternative exam assessment in the form of a one-hour examination comprising a written and an oral part. The examination takes place as an individual examination or in groups of two.

### Prerequisites

None

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



### Panel Data

2520320, SS 2024, 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

**7.158 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
Written examination

Credits
4,5

Grading scale
Grade to a third

Recurrence
Irregular

Version
1

**Competence Certificate**

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

The examination is held in the semester of the lecture and in the following semester.

**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](http://www.ior.kit.edu)).





T

**7.159 Course: Patent Law [T-INFO-101310]**

**Responsible:** Patric Werner  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101215 - Intellectual Property Law](#)

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

Events					
ST 2024	24656	<a href="#">Patent Law</a>	2 SWS	Lecture / 	Werner
Exams					
ST 2024	7500109	<a href="#">Patent Law</a>			Sattler
WT 24/25	7500006	<a href="#">Patent Law</a>			Sattler, Matz

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

**Competence Certificate**

The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 60 minutes.

**Prerequisites**

None.

**Recommendation**

None.

T

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

Events					
WT 24/25	2581952	<a href="#">Design and Operation of Industrial Plants and Processes</a>	2 SWS	Lecture / 🗎	Schultmann, Rudi
WT 24/25	2581953	<a href="#">Übungen Anlagenwirtschaft/Design and Operation of Industrial Plants and Processes</a>	2 SWS	Practice / 🗎	Temnov, Schneider
Exams					
ST 2024	7981952	<a href="#">Planning and Management of Industrial Plants</a>			Schultmann

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

**Competence Certificate**

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

**Prerequisites**

None

**Recommendation**

None

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

V

**Design and Operation of Industrial Plants and Processes**

2581952, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
On-Site**

**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

## 7.161 Course: Platform & Market Engineering: Commerce, Media, and Digital Democracy [T-WIWI-112823]

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101409 - Electronic Markets](#)  
[M-WIWI-101411 - Information Engineering](#)  
[M-WIWI-101446 - Market Engineering](#)  
[M-WIWI-101453 - Applied Strategic Decisions](#)  
[M-WIWI-102754 - Service Economics and Management](#)

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

Events					
ST 2024	2540460	<a href="#">Platform &amp; Market Engineering: Commerce, Media, and Digital Democracy</a>	2 SWS	Lecture / 	Weinhardt, Fegert
ST 2024	2540461	<a href="#">Übungen zu Platform &amp; Market Engineering: Commerce, Media, and Digital Democracy</a>	1 SWS	Practice / 	Fegert, Stano
Exams					
ST 2024	7979235	<a href="#">Platform &amp; Market Engineering: Commerce, Media, and Digital Democracy</a>			Weinhardt

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

### Competence Certificate

The assessment consists of a written exam (60 min) (according to §4(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

### Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-102640 - Market Engineering: Information in Institutions](#) must not have been started.

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

V

### Platform & Market Engineering: Commerce, Media, and Digital Democracy

2540460, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
On-Site

### Organizational issues

ehemals: "Market Engineering: Information in Institutions"

### 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

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

Events					
ST 2024	2520357	<a href="#">Portfolio and Asset Liability Management</a>	2 SWS	Lecture	Safarian
ST 2024	2520358	<a href="#">Übungen zu Portfolio and Asset Liability Management</a>	2 SWS	Practice	Safarian
Exams					
ST 2024	7900357	<a href="#">Portfolio and Asset Liability Management</a>			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:*

**Portfolio and Asset Liability Management**

2520357, SS 2024, 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, Termine werden über Ilias bekanntgegeben

**Literature**

To be announced in the lecture

T

**7.163 Course: Practical Philosophy 1.1 [T-GEISTSOZ-101170]**

**Responsible:** Prof. Dr. Michael Schefczyk  
**Organisation:** KIT Department of Humanities and Social Sciences  
**Part of:** [M-WIWI-106413 - Digitalization & Society](#)

Type	Credits	Grading scale	Recurrence	Version
Completed coursework	4,5	pass/fail	Each winter term	4

Events					
WT 24/25	5012044	<a href="#">Introduction to Political and Moral Philosophy</a>	2 SWS	Course ( / ●)	Schefczyk
Exams					
WT 24/25	7400078	<a href="#">Introduction to Practical Philosophy</a>			Schefczyk

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

**Prerequisites**

none

T

**7.164 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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Irregular	1

Exams			
ST 2024	7900262	<a href="#">Practical Seminar: Human-Centered Systems</a>	Mädche
ST 2024	7900307	<a href="#">Service Design Thinking</a>	Satzger
ST 2024	7900312	<a href="#">Practical Seminar Service Innovation</a>	Satzger
WT 24/25	7900341	<a href="#">Practical Seminar: Human-Centered Systems</a>	Mädche

**Competence Certificate**

The assessment consists of a seminar paper, a presentation of the results and the contribution to the discussion (according to §4(2), 3 of the examination regulation). The final grade is based on the evaluation of each component (seminar paper, oral presentation, and active participation).

**Prerequisites**

None

**Recommendation**

None

**Annotation**

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



T

## 7.165 Course: Practical Seminar: Artificial Intelligence in Service Systems [T-WIWI-112152]

**Responsible:** Prof. Dr. Gerhard Satzger  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101506 - Service Analytics](#)

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

Exams			
ST 2024	7900312	<a href="#">Practical Seminar Service Innovation</a>	Satzger

### Competence Certificate

The assessment of this course is 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 in the field of Artificial Intelligence in Service Systems is assumed. Therefore, it is recommended to attend the course Artificial Intelligence in Service Systems [2595650] beforehand.

T

## 7.166 Course: Practical Seminar: Data-Driven Information Systems [T-WIWI-106207]

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

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

**Part of:** [M-WIWI-103117 - Data Science: Data-Driven Information Systems](#)

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

Exams			
ST 2024	7900322	<a href="#">Practical Seminar: Data Science for Industrial Applications</a>	Satzger

### 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

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

Events					
ST 2024	2550498	<a href="#">Practical seminar: Health Care Management</a>	3 SWS	Seminar / 	Nickel, Mitarbeiter
WT 24/25	2500008	<a href="#">Practical seminar: Health Care Management</a>	3 SWS	Others (sons / 	Nickel, Mitarbeiter
Exams					
ST 2024	7900361	<a href="#">Practical Seminar: Health Care Management (with Case Studies)</a>			Nickel
WT 24/25	7900105	<a href="#">Practical Seminar: Health Care Management (with Case Studies)</a>			Nickel

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

**Competence Certificate**

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.

**7.168 Course: Practical Seminar: Human-Centered Systems [T-WIWI-113459]**

**Responsible:** Prof. Dr. Alexander Mädche  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-102806 - Service Innovation, Design & Engineering](#)  
[M-WIWI-103117 - Data Science: Data-Driven Information Systems](#)  
[M-WIWI-104068 - Information Systems in Organizations](#)  
[M-WIWI-104080 - Designing Interactive Information Systems](#)

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

Events					
ST 2024	2540554	<a href="#">Practical Seminar: Human-Centered Systems</a>	3 SWS	Lecture /	Mädche
WT 24/25	2540554	<a href="#">Practical Seminar: Human-Centered Systems</a>	3 SWS	Lecture /	Mädche
Exams					
ST 2024	7900262	<a href="#">Practical Seminar: Human-Centered Systems</a>			Mädche
WT 24/25	7900341	<a href="#">Practical Seminar: Human-Centered Systems</a>			Mädche

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

**Competence Certificate**

The assessment of this course is in the form of a different type of examination. The assessment is carried out by a practical component, preparing written documentation and actively participating in the discussions. A total of 60 points can be achieved, of which:

- a maximum of 25 points for the written documentation
- a maximum of 25 points for the practical component
- a maximum of 10 points for active participation in the discussions

At least 30 points must be achieved to pass the performance assessment. Please note that a practical component such as conducting a survey or implementing an application is also part of the regular scope of the course in addition to the written documentation. The respective tasks can be found in the announcement on the institute's website <https://h-lab.iism.kit.edu>.

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

**Practical Seminar: Human-Centered Systems**

2540554, SS 2024, 3 SWS, Language: English, [Open in study portal](#)

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

**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.

Please find the current open offerings on our website: <https://h-lab.iism.kit.edu/thesis.php>

**Prerequisites**

Profound skills in software development are required

**Literature**

Further literature will be made available in the seminar.

**Practical Seminar: Human-Centered Systems**

2540554, WS 24/25, 3 SWS, Language: English, [Open in study portal](#)

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

T

**7.169 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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Irregular	1

Exams			
ST 2024	7900307	<a href="#">Service Design Thinking</a>	Satzger
ST 2024	7900312	<a href="#">Practical Seminar Service Innovation</a>	Satzger

**Competence Certificate**

Success is assessed through the preparation of written documentation, a presentation of the results of the practical components carried out and active participation in the discussions (in accordance with §4(2), 3 SPO).

Please note that a practical component such as conducting a survey or implementing an application is also part of the regular scope of the course in addition to the written documentation. Please refer to the course description for the respective tasks.

The overall grade is made up of the weighted components (e.g. documentation, oral presentation, practical work and active participation). The weighting of these components for the grade will be announced at the beginning of the course.

**Recommendation**

Knowledge of Service Innovation Methods is assumed. Therefore it is recommended (but not mandatory) 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

**7.170 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](#)  
[M-WIWI-106408 - Digital Economics](#)

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

**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.

**7.171 Course: Predictive Modeling [T-WIWI-110868]**

**Responsible:** 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](#)  
[M-WIWI-106411 - Statistics & Econometrics](#)

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

Events					
ST 2024	2521311	<a href="#">Predictive Modeling</a>	2 SWS	Lecture /	Krüger, Koster
ST 2024	2521312	<a href="#">Predictive Modeling (Tutorial)</a>	2 SWS	Practice /	Koster, Krüger
Exams					
ST 2024	7900298	<a href="#">Predictive Modeling</a>			Krüger
WT 24/25	7900014	<a href="#">Predictive Modeling</a>			Krüger

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

**Competence Certificate**

The assessment of this course is a written examination (90 minutes) according to §4(2), 1 of the examination regulation. A bonus can be acquired by successful completion of an assignment (written report + short in-class presentation) during the semester. 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).

**Prerequisites**

None

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

**Predictive Modeling**

2521311, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
On-Site

**Content**  
**Contents**

This course presents methods for making and evaluating statistical predictions based on data. We consider various types of predictions (mean, probability, quantile, and full distribution), all of which are practically relevant. In each case, we discuss selected modeling approaches and their implementation using R software. We consider various economic case studies. Furthermore, we present methods for absolute evaluation (assessing whether a given model is compatible with the data) and relative evaluation (comparing the predictive performance of alternative models).

**Learning objectives**

Students have a good conceptual understanding of statistical prediction methods. They are able to implement these methods using statistical software, and can assess which method is suitable in a given situation.

**Prerequisites**

Students should know econometrics on the level of the course 'Applied Econometrics' [2520020]

**Literature**

- Elliott, G., und A. Timmermann (Hrsg.): "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.
- Hastie, T., Tibshirani, R., and J. Friedman: "The Elements of Statistical Learning", 2. Ausgabe, Springer, 2009.
- Weitere Literatur wird in der Vorlesung bekanntgegeben.

**Predictive Modeling (Tutorial)**

2521312, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Practice (Ü)**  
On-Site

T

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

Events					
ST 2024	2540529	<a href="#">Price Management</a>	2 SWS	Lecture / 🗣️	Glenn
ST 2024	2540530	<a href="#">Exercise Price Management</a>	1 SWS	Practice / 🗣️	Glenn
Exams					
ST 2024	7900139	<a href="#">Price Management</a>			Geyer-Schulz
WT 24/25	7900170	<a href="#">Price Management (Nachklausur SoSe 2024)</a>			Geyer-Schulz

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

**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 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
On-Site**

**Organizational issues**

Termine:

Samstags von 9:00 - 19:00 Uhr

18.05.2024 => Termin 1

08.06.2024 => Termin 2

29.06.2024 => Termin 3

20.07.2024 => Termin 4

**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

**7.173 Course: Pricing [T-WIWI-102883]**

**Responsible:** Prof. Dr. Martin Klarmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-105312 - Marketing and Sales Management](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each winter term	3

Events					
WT 24/25	2572199	<a href="#">Pricing</a>	3 SWS	Block / 	Bill, Klarmann, Schröder

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

**Competence Certificate**

Alternative exam assessment. The examination (and thus the grade) is composed of three parts:

1. The design and execution of your own small experimental study around the topic of behavioral pricing (as group work).
2. The processing and presentation of a case study on pricing (as group work).
3. The execution of a simulated price negotiation based on a systematic preparation (usually in teams of two).

**Prerequisites**

Since the earlier course (a) "Pricing Excellence" and (b) "Price Negotiations and Sales Presentations" become parts of the Pricing course, Pricing cannot be taken if (a) and/or (b) have already been completed.

**Recommendation**

Students are highly encouraged to actively participate in class.

**Annotation**

A small application is required for participation in this class. The application phase usually takes place at the beginning of the lecture period in the winter semester. More information on the application process will be made available on the Marketing and Sales Research Group website ([marketing.iism.kit.edu](http://marketing.iism.kit.edu)) shortly before the start of the winter semester lecture period. This course is limited to 24 participants.

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

V

**Pricing**

2572199, WS 24/25, 3 SWS, Language: English, [Open in study portal](#)

**Block (B)**  
**On-Site**

**Content**

At the Pricing lecture, students learn about current research and best practices in price management. Delivered in workshop format, the lecture has three key elements:

## 1. "Behavioral Pricing" workshop

In this part of the course, central concepts and findings from behavioral pricing research (e.g. price information processing, reference prices, price fairness and mental accounting) are presented and discussed on the basis of important behavioral theories (e.g. prospect theory and information economics). After a brief introduction to experimental research, participants will then conduct their own small experimental study in the form of group work on a hypothesis they have developed on pricing behavior, analyze the data, and present it.

## 2. "Pricing Excellence" workshop

In a theory section at the beginning of the course, students are taught theoretical principles of pricing. This includes an introduction to (1) pricing of product prices as well as (2) pricing of net customer prices (development of discount systems). Furthermore, theoretical basics of price enforcement and price monitoring are discussed. This will be followed by a practical application of what has been learned by working on a case study in small groups with a concluding presentation.

## 3. "Price Negotiation" workshop

After an introduction to key theories and concepts of negotiation, students prepare and then conduct a simulated price negotiation in small groups with guidance.

Learning Objectives:

Students...

- are familiar with central theories explaining behavioral phenomena regarding consumers dealing with prices
- are able to describe and explain central phenomena of behavioral science with regard to price behavior and derive implications from them
- can formulate their own hypotheses on price behavior and design, conduct and evaluate a suitable experimental study for this purpose
- learn theoretical basics of pricing behavior
- learn the theoretical basics of price enforcement and price monitoring
- apply the acquired knowledge in a practical case study
- know important conceptual basics on the subject of price negotiations
- can prepare and competently conduct price negotiations
- present the results of their group work in a concise and structured manner

All events will take place in presence with compulsory attendance at all dates.

Total time required for 4.5 credit points: approx. 135 hours

Attendance time: 30 hours

Self-study: 105 hours

**Organizational issues**

Dates will be announced.

T

**7.174 Course: Probabilistic Time Series Forecasting Challenge [T-WIWI-111387]**

**Responsible:** 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](#)  
[M-WIWI-106411 - Statistics & Econometrics](#)

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

Events					
WT 24/25	2500080	<a href="#">Probabilistic Time Series Forecasting Challenge</a>	2 SWS	Practice / 📄	Bracher, Koster, Lerch, Krüger
WT 24/25	2500081	<a href="#">Probabilistic Time Series Forecasting Challenge</a>		Project (P / 🔄)	Krüger, Bracher, Koster, Lerch

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

**Competence Certificate**

Alternative exam assessment. Necessary conditions to pass the course:

- Weekly submission of statistical forecasts during the semester (excluding the Christmas break),
- Presentation (ca. 20 minutes) during the semester,
- Submission of a final report (5-10 pages) around the end of the semester.

Grading is based on the presentation (30%) and the final report (70%).

**Prerequisites**

Good methodological knowledge in statistics and data science.

Good knowledge in applied data analysis, incl. programming skills in R, Python or similar.

Knowledge of time series analysis is helpful, but not required.

**Annotation**

The course is limited in participation. Participants will be selected via the WIWI portal.

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

V

**Probabilistic Time Series Forecasting Challenge**

2500081, WS 24/25, SWS, Language: English, [Open in study portal](#)

**Project (PRO)**  
**Blended (On-Site/Online)**

**Content**

Statistical forecasts are relevant across all fields of society. In this data science project, students make, evaluate and communicate their own statistical forecasts in a real-time setting. We consider probabilistic forecasts that involve a measure of uncertainty in addition to a point forecast. Students are asked to make forecasts of several real-world time series (including weather variables and the DAX stock market index). Historical data on all series are available from public sources that are updated as time proceeds. While the time series differ from each other in important ways, statistical methods can meaningfully be used for prediction in all cases. We focus on quantile forecasts which are useful to measure forecast uncertainty in a relatively simple way.

**Organizational issues****Short description**

In this data science project, students make and evaluate statistical forecasts in a realistic setup (involving real-time predictions and real-world time series data). A kickoff meeting will take place in person in mid October. During the semester, there will be a weekly online meeting in which students and instructors discuss the current state of the forecasting challenge.

**Prerequisites**

Students should have a good working knowledge of statistics and data science, including proficiency in a programming language like R, Python, or Matlab. Knowledge of time series analysis is helpful but not strictly required. Motivation and curiosity are particularly important in this course format that requires regular, active participation over the whole semester.

Please note that the number of participants is limited due to the interactive course format. Application takes place via the Wiwi portal, where further information is available.

**Examination rules**

The course counts for 4.5 credit points (Leistungspunkte). Examination is via an alternative exam assessment (§4(2), 3 SPO).

Necessary conditions to pass the course:

- 1) Weekly submission of statistical forecasts during the semester, excluding the Christmas break,
- 2) A presentation (approx. 20 minutes) during the semester,
- 3) Submission of a final report (5-10 pages) around the end of the semester.

The presentation and the final report should describe the forecasting methods and their statistical evaluation. Grading is based on the presentation (30%) and the final report (70%).

T

**7.175 Course: Process Mining [T-WIWI-109799]**

**Responsible:** Prof. Dr. Andreas Oberweis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)  
[M-WIWI-105880 - Informatics & Machine Learning](#)

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

Events					
ST 2024	2511204	<a href="#">Process Mining</a>	2 SWS	Lecture / 🗣️	Oberweis
ST 2024	2511205	<a href="#">Exercise Process Mining</a>	1 SWS	Practice / 🗣️	Oberweis, Schreiber, Schüler, Rybinski
Exams					
ST 2024	79AIFB_PM_G2	<a href="#">Process Mining (Registration until 21 July 2024)</a>			Oberweis
WT 24/25	79AIFB_PM_A5	<a href="#">Process Mining</a>			Oberweis

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

**Competence Certificate**

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

**Prerequisites**

None

**Annotation**

Former name (up to winter semester 2018/1019) "Workflow Management".

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

V

**Process Mining**

2511204, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**Content**

The area of process mining covers approaches which aim at deducting new knowledge on the basis of logfiles generated by information systems. Such information systems are e.g., workflow-management-systems which are used for an efficient control of processes in enterprises and organisations. The lecture introduces the foundations of processes and respective modeling and analysis techniques. In the following, the foundations of process mining and the three classical types of approaches - discovery, conformance and enhancement - will be taught. In addition to the theoretical basics, tools, application scenarios in practice and open research questions are covered as well.

**Learning objectives:**

Students

- understand the concepts and approaches of process mining and know how they are applied,
- create and evaluate business process models,
- analyze static and dynamic properties of workflows,
- apply approaches and tools of process mining.

**Recommendations:**

Knowledge of course Applied Informatics - Modelling is expected.

**Workload:**

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

**Literature**

- W. van der Aalst, H. van Kees: Workflow Management: Models, Methods and Systems, Cambridge, The MIT Press, 2002.
- W. van der Aalst: Process Mining: Data Science in Action. Springer, 2016.
- J. Carmona, B. van Dongen, A. Solti, M. Weidlich: Conformance Checking: Relating Processes and Models. Springer, 2018.
- A. Drescher, A. Koschmider, A. Oberweis: Modellierung und Analyse von Geschäftsprozessen: Grundlagen und Übungsaufgaben mit Lösungen. De Gruyter Studium, 2017.
- A. Oberweis: Modellierung und Ausführung von Workflows mit Petri-Netzen. Teubner-Reihe Wirtschaftsinformatik, B.G. Teubner Verlag, 1996.
- R. Peters, M. Nauroth: Process-Mining: Geschäftsprozesse: smart, schnell und einfach, Springer, 2019.
- F. Schönthaler, G.Vossen, A. Oberweis, T. Karle: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer, 2012.
- M. Weske: Business Process Management: Concepts, Languages, Architectures. Springer, 2012.

Weitere Literatur wird in der Vorlesung bekannt gegeben.

T

**7.176 Course: Production and Logistics Management [T-WIWI-102632]**

**Responsible:** Prof. Dr. Frank Schultmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101412 - Industrial Production III](#)

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

Events					
ST 2024	2581954	<a href="#">Production and Logistics Management</a>	2 SWS	Lecture / 🎤	Schultmann, Rudi
ST 2024	2581955	<a href="#">Production and Logistics Management</a>	2 SWS	Practice / 🎤	Treml
Exams					
ST 2024	7981954	<a href="#">Production and Logistics Management</a>	Schultmann		

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

**Competence Certificate**

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

**Prerequisites**

None

**Recommendation**

None

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

V

**Production and Logistics Management**

2581954, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**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

**7.177 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-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	5	Grade to a third	Each winter term	3

Events				
WT 24/25	2512501	<a href="#">Practical Course Cognitive automobiles and robots (Master)</a>	3 SWS	Practical course /  Zöllner, Daaboul
Exams				
WT 24/25	7900107	<a href="#">Advanced Lab Cognitive Automobile and Robots (Master)</a>		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

**Practical Course Cognitive automobiles and robots (Master)**

2512501, WS 24/25, 3 SWS, Language: German/English, [Open in study portal](#)

**Practical course (P)  
Blended (On-Site/Online)**

**Content**

The lab is intended as a practical supplement to courses such as "Machine Learning 1/2". Scientific topics, mostly in the area of autonomous driving and robotics, will be addressed in joint work with ML/KI methods. The goal of the internship is for participants to design, develop, and evaluate ML Software system.

In addition to the scientific goals, such as the study and application of methods, the aspects of project-specific teamwork in research (from specification to presentation of results) are also worked on in this internship.

The individual projects require the analysis of the set task, selection of appropriate methods, specification and implementation and evaluation of the solution approach. Finally, the selected solution is to be documented and presented in a short lecture.

**Learning Objectives:**

- Students will be able to practically apply theoretical knowledge from lectures on machine learning to a selected area of current research.
- Students will be proficient in analyzing and solving thematic problems.
- Students will be able to evaluate, document, and present their concepts and results.

**Recommendations:**

- Theoretical knowledge of machine learning and/or AI.
- Python knowledge
- Initial experience with deep learning frameworks such as PyTorch/Jax/Tensorflow may be beneficial.

**Workload:**

The workload of 5 credit points consists of practical implementation of the selected solution, as well as time for literature research and planning/specification of the selected solution. In addition, a short report and presentation of the work performed 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

**7.178 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-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	5	Grade to a third	Each summer term	3

Events					
ST 2024	2512500	<a href="#">Project Lab Machine Learning</a>	3 SWS	Practical course / 	Daaboul, Zöllner, Schneider
Exams					
ST 2024	7900086	<a href="#">Project Lab Machine Learning</a>			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

**Project Lab Machine Learning**

2512500, SS 2024, 3 SWS, Language: German/English, [Open in study portal](#)

**Practical course (P)  
Blended (On-Site/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 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

**7.179 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	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each winter term	1

Events					
WT 24/25	2581963	<a href="#">Project Management</a>	2 SWS	Lecture / 	Schultmann, Volk
Exams					
ST 2024	7981963	<a href="#">Project Management</a>			Schultmann

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

**Competence Certificate**

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

**Prerequisites**

None

**Recommendation**

None

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

V

**Project Management**

2581963, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
On-Site

**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

**7.180 Course: Public International Law [T-INFO-113381]****Organisation:** KIT Department of Informatics**Part of:** [M-INFO-106754 - Public Economic and Technology Law](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each summer term	2

Events					
ST 2024	2400172	<a href="#">Public International Law</a>	2 SWS	Lecture / 🗎	Kasper
Exams					
ST 2024	7500182	<a href="#">Public International Law</a>			Zufall

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

**Competence Certificate**

The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 60 minutes.

Depending on the number of participants, it will be announced six weeks before the examination (§ 6 (3) SPO) whether the performance assessment is carried out

- as an oral examination (duration approx. 20 mins.) (§ 4 Abs. 2 Nr. 2 SPO) or
- as a written examination (lasting 60 mins.) (§ 4 Abs. 2 No. 1 SPO).

**Prerequisites**

None.

**Recommendation**

- General knowledge of (public) law (eg, through participating in public law or EU law modules) is helpful but not necessary.
- Interest in international affairs and politics is welcomed.

**Annotation**

Competency Goals:

- Participating students will be able to navigate the plethora of multilateral treaties to detect relevant international law for specific cases.
- They can develop solutions for legal problems based on case law of international courts and tribunals.
- Students will be able to read and comprehend international treaties and case law.
- They will have a fundamental understand of the interplay between various subfields of public international law.
- Students can identify and explain current issues in public international law.

Content:

The lecture is designed to provide participating students with a general understanding of the foundations, subjects, and sources of public international law, its interplay with national legal regimes, and more detailed knowledge of particular subfields of public international law.

Since the lecture targets students of information systems, particular focus will be given to economic topics in international law, such as investment and trade law aspects. Due to the general importance of climate change for today's (economic) law, international climate change law and environmental law will form further focus areas.

In addition, a concise overview on human rights law, the law on State responsibility, and the peaceful settlement of disputes will be provided.

Throughout the lecture, important case law will be referenced and students are expected to read relevant cases in part to facilitate a discussion of such cases and their relevance for a subject field. Although the United Nations, including its principal judicial organ, the International Court of Justice, is one of the, if not the, key international organization in public international law, further international organizations (eg, Council of Europe, World Trade Organization) and their respective law(s) will also be touched.

Students are advised to have a statute book at hand that includes the most important international treaties and conventions (eg, Evans, Blackstone's International Law Documents, currently 15th ed 2021).

Conducting the lecture in English intends to facilitate students to link their ideas and arguments to current debates in international law.

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



## Public International Law

2400172, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
On-Site

### Content

#### Content:

The lecture is designed to provide participating students with a general understanding of the foundations, subjects, and sources of public international law, its interplay with national legal regimes, and more detailed knowledge of particular subfields of public international law.

Since the lecture targets students of information systems, particular focus will be given to economic topics in international law, such as investment and trade law aspects. Due to the general importance of climate change for today's (economic) law, international climate change law and environmental law will form further focus areas.

In addition, a concise overview on human rights law, the law on State responsibility, and the peaceful settlement of disputes will be provided.

Throughout the lecture, important case law will be referenced and students are expected to read relevant cases in part to facilitate a discussion of such cases and their relevance for a subject field. Although the United Nations, including its principal judicial organ, the International Court of Justice, is one of the, if not the, key international organization in public international law, further international organizations (eg, Council of Europe, World Trade Organization) and their respective law(s) will also be touched.

Students are advised to have a statute book at hand that includes the most important international treaties and conventions (eg, Evans, Blackstone's International Law Documents, currently 15th ed 2021).

Conducting the lecture in English intends to facilitate students to link their ideas and arguments to current debates in international law.

#### Competency Goals:

- Participating students will be able to navigate the plethora of multilateral treaties to detect relevant international law for specific cases.
- They can develop solutions for legal problems based on case law of international courts and tribunals.
- Students will be able to read and comprehend international treaties and case law.
- They will have a fundamental understanding of the interplay between various subfields of public international law.
- Students can identify and explain current issues in public international law.

Area of Specialization: For Master modules only.

#### Interest/Recommendations:

- General knowledge of (public) law (eg, through participating in public law or EU law modules) is helpful but not necessary.
- Interest in international affairs and politics is welcomed.

The total workload for this course unit is 90 hours for 3 credit points, of which 22.5 hours are spent in attendance.

#### Organizational issues

Estimated lecture dates (lecture room(s) have not been booked by now). 21.12.2023, sf

- 27th of April, 9 to 17 hours (in class)
- 8th of June, 9 to 17 hours (in class)
- 20th of July, 9 to 17 hours (in class)

T

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

Events					
WT 24/25	2561127	<a href="#">Public Management</a>	3 SWS	Lecture / Practice ( / ) 🔄	Wigger
Exams					
ST 2024	790puma	<a href="#">Public Management</a>			Wigger
WT 24/25	790puma	<a href="#">Public Management</a>			Wigger

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

**Competence Certificate**

Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1.5h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

**Prerequisites**

None

**Recommendation**

Basic knowledge of Public Finance is required.

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

V

**Public Management**

2561127, WS 24/25, 3 SWS, Language: German, [Open in study portal](#)

Lecture / Practice (VÜ)  
Blended (On-Site/Online)

**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

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

Events					
ST 2024	2560120	<a href="#">Public Revenues</a>	2 SWS	Lecture / 🗣️	Wigger
ST 2024	2560121	<a href="#">Übung zu Öffentliche Einnahmen</a>	1 SWS	Practice / 🗣️	Wigger, Schmelzer
Exams					
ST 2024	790oeff	<a href="#">Public Revenues</a>			Wigger
WT 24/25	790oeff	<a href="#">Public Revenues</a>			Wigger

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

**Competence Certificate**

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

**Prerequisites**

None

**Recommendation**

Basic knowledge of Public Finance is required.

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

V

**Public Revenues**

2560120, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
On-Site**

**Content**

The *Public Revenues* lecture is concerned with the theory and policy of taxation and public dept. In the first chapter, fundamental concepts of taxation theory are introduced, whereas the second chapter deals with key elements of the German taxation system. The allocative and distributive effects of different taxation types are examined in chapter three and four. Chapter five integrates both allocative and distributive components in order to derive a theory of optimal taxation. The core of the sixth chapter is represented by international aspects of taxation. The debt part begins with a description of the extent and structure of public dept in chapter seven. In the following chapter, macroeconomic theories of national dept are evolved, while chapter nine is concerned with its long term consequences when employed as a regular instrument of budgeting. Finally, the tenth chapter deals with constitutional limits to public debt-incurring.

**Learning goals:**

See German version.

**Workload:**

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

**Literature****Literatur:**

- Homburg, S.(2000): *Allgemeine Steuerlehre*, Vahlen
- Rosen, H.S.(1995): *Public Finance*; 4. Aufl., Irwin
- Wellisch, D.(2000): *Finanzwissenschaft I* und *Finanzwissenschaft III*, Vahlen
- Wigger, B. U.(2006): *Grundzüge der Finanzwissenschaft*; 2. Aufl., Springer

T

**7.183 Course: Quantitative Methods in Energy Economics [T-WIWI-107446]**

**Responsible:** Dr. Patrick Plötz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101451 - Energy Economics and Energy Markets](#)

Type	Credits	Grading scale	Recurrence	Version
Oral examination	3,5	Grade to a third	Each winter term	3

Events					
WT 24/25	2581007	<a href="#">Quantitative Methods in Energy Economics</a>	2 SWS	Lecture / 🗣️	Plötz
WT 24/25	2581008	<a href="#">Übungen zu Quantitative Methods in Energy Economics</a>	1 SWS	Practice / 🗣️	Plötz, Britto
Exams					
ST 2024	7981007	<a href="#">Quantitative Methods in Energy Economics</a>			Fichtner
WT 24/25	7981007	<a href="#">Quantitative Methods in Energy Economics</a>			Fichtner

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

**Competence Certificate**

The assessment consists of an oral (app. 30 minutes) exam (following §4(2) 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 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**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

**7.184 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-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services](#)

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

Events					
WT 24/25	2540506	<a href="#">Recommender Systems</a>	2 SWS	Lecture /	Geyer-Schulz
WT 24/25	2540507	<a href="#">Exercise Recommender Systems</a>	1 SWS	Practice /	Geyer-Schulz, Nazemi
Exams					
ST 2024	7900138	<a href="#">Recommender Systems</a>			Geyer-Schulz
WT 24/25	7900310	<a href="#">Recommender Systems (WS 2024/2025)</a>			Geyer-Schulz

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

**Competence Certificate**

Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five 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, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)**Lecture (V)**  
**On-Site**

**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

**Organizational issues**

Geb. 10.11, Raum 223

**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

**7.185 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	Grading scale	Recurrence	Version
Oral examination	4,5	Grade to a third	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.

**7.186 Course: Responsible Artificial Intelligence [T-WIWI-111385]**

**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-105923 - Incentives, Interactivity & Decisions in Organizations](#)

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

Events					
WT 24/25	2545164	<a href="#">Responsible Artificial Intelligence</a>	2 SWS	Lecture /	Hoffmann, Miskiw
WT 24/25	2545165	<a href="#">Responsible Artificial Intelligence</a>	1 SWS	Practice /	Hoffmann, Miskiw
Exams					
WT 24/25	7900290	<a href="#">Responsible Artificial Intelligence</a>	Weinhardt		

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

**Competence Certificate**

The final grade is based on an examination of other type according to § 4 Par. 2 No. 3. It consists of

- The completion of an exercise including a short presentation (15 min)(max. 30 points)
- Oral exam (max. 60 points).

Further details are explained during the lecture.

**Prerequisites**

Prior to the start of the lecture, introductory materials will be provided for self-study. The lecture has a limitation of participants. Therefore, prior registration via the Wiwi-Portal is mandatory.

**Annotation**

Can a technology really be trustworthy or even responsible? Since the success of LLMs at the latest, this question has been increasingly asked in society. With the increasing use of artificial intelligence, terms such as "Trustworthy AI", "Responsible AI" or "Ethical AI" are therefore gaining in importance. But what exactly is behind them? Technology is only ever used by people for specific purposes. So if we want to "trust" an AI solution, we need to understand how the people and organizations involved develop AI responsibly. According to the European Commission's HLEG AI, trustworthy AI must be lawful, ethical and robust.

This lecture sheds light on all these areas and thus provides an answer to the question of what a responsible and thus sustainable approach to AI can look like. After an introduction to AI and data, various approaches will be discussed with which actions and technology applications can be morally evaluated. The aim of this ethical reflection is to find out what we should do with AI instead of limiting ourselves to what we can do with AI.

In the context of robustness, vulnerabilities of AI and measures to address them will be discussed. The lecture will cover other topics such as bias, adversarial attacks, transparency, privacy and human-computer interaction. Current developments in regulatory requirements at European level will also be discussed. Guest lectures and continuous insights into business practice complement the foundations laid.

After successfully completing the course, students should be able


- to classify and evaluate the scientific discussion on ethics in artificial intelligence systems,
- understand the concept of trust and responsibility in the context of artificial intelligence and apply the relevant knowledge to change processes in companies,
- shape the social and entrepreneurial discussion on the use of AI themselves and
- know the legal requirements for AI and implement them in the corporate context.

T

**7.187 Course: Risk Management in Industrial Supply Networks [T-WIWI-102826]**

**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	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each winter term	1

Events					
WT 24/25	2581992	<a href="#">Risk Management in Industrial Supply Networks</a>	2 SWS	Lecture / 	Schultmann, Rosenberg
Exams					
ST 2024	7981992	<a href="#">Risk Management in Industrial Supply Networks</a>	Schultmann		

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

**Competence Certificate**

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

**Prerequisites**

None

**Recommendation**

None

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

V

**Risk Management in Industrial Supply Networks**2581992, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)**Lecture (V)  
On-Site****Content**

Students learn methods and tools to manage risks in complex and dynamically evolving supply chain networks. In the first part of the lectures, students are introduced to the key terms and concepts of risk management and decision theory for industrial application. Based on the theoretic prerequisites, students are able to determine and analyze risk diversification, risk pooling and insurance mechanisms in supply chain network management. Lastly the lectures cover the differences and connection between risk management and resilience in industrial networks.

**Literature**


Wird in der Veranstaltung bekannt gegeben.

T

**7.188 Course: Selected Legal Issues of Internet Law [T-INFO-108462]**

**Responsible:** N.N.  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101215 - Intellectual Property Law](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each summer term	1

Events					
ST 2024	24821	<a href="#">Selected legal issues of Internet law</a>	2 SWS	Colloquium (K /  )	Sattler
Exams					
ST 2024	7500099	<a href="#">Selected Legal Issues of Internet Law</a>			Sattler

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

**Competence Certificate**

The assessment is carried out as an examination of another type (§ 4 Abs. 2 No. 3 SPO).

The overall impression is evaluated. The following partial aspects are included in the grading: oral presentation and discussion.

**Prerequisites**

The course **Internet Law T-INFO-101307** must not have started.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-INFO-101307 - Internet Law](#) must not have been started.

**Recommendation**

Keine.

**Annotation**

Lecture (with written exam) **Internet Law T-INFO-101307** is offered in the winter semester.

Colloquium (other type of examination) **Selected Legal Issues of Internet Law T-INFO-108462** offered in the summer semester



T

**7.189 Course: Self-Booking-HOC-SPZ-ZAK-STK-Graded [T-WIWI-111439]****Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Version
Examination of another type	2	Grade to a third	2

**Self service assignment of supplementary studies**

This course can be used for self service assignment of grade acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

**Annotation**

Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T

**7.190 Course: Self-Booking-HOC-SPZ-ZAK-STK-Graded [T-WIWI-111438]****Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Version
Examination of another type	1	Grade to a third	2

**Self service assignment of supplementary studies**

This course can be used for self service assignment of grade acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

**Annotation**

Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T

**7.191 Course: Self-Booking-HOC-SPZ-ZAK-STK-Graded [T-WIWI-111440]****Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Version
Examination of another type	3	Grade to a third	2

**Self service assignment of supplementary studies**

This course can be used for self service assignment of grade acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

**Annotation**

Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T

**7.192 Course: Self-Booking-HOC-SPZ-ZAK-STK-Ungraded [T-WIWI-111441]****Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Version
Completed coursework	1	pass/fail	1

**Self service assignment of supplementary studies**

This course can be used for self service assignment of grade acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

**Annotation**

Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T

**7.193 Course: Self-Booking-HOC-SPZ-ZAK-STK-Ungraded [T-WIWI-111442]****Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Version
Completed coursework	2	pass/fail	1

**Self service assignment of supplementary studies**

This course can be used for self service assignment of grade acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

**Annotation**

Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T

**7.194 Course: Self-Booking-HOC-SPZ-ZAK-STK-Ungraded [T-WIWI-111443]****Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Version
Completed coursework	3	pass/fail	1

**Self service assignment of supplementary studies**

This course can be used for self service assignment of grade acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

**Annotation**

Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

**7.195 Course: Semantic Web Technologies [T-WIWI-110848]**

**Responsible:** Dr.-Ing. Tobias Käfer  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)  
[M-WIWI-105880 - Informatics & Machine Learning](#)

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

Events					
ST 2024	2511310	<a href="#">Semantic Web Technologies</a>	2 SWS	Lecture /	Färber, Käfer, Braun, Kinder
ST 2024	2511311	<a href="#">Exercises to Semantic Web Technologies</a>	1 SWS	Practice /	Färber, Käfer, Braun, Kinder
Exams					
ST 2024	79AIFB_SWebT_A4	<a href="#">Semantic Web Technologies (Registration until 15 July 2024)</a>			Käfer
WT 24/25	79AIFB_SWebT_A2	<a href="#">Semantic Web Technologies</a>			Käfer

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

**Competence Certificate**

The assessment consists of an 1h written exam following §4, Abs. 2, 1 of the examination regulation or of an oral exam (20 min) following §4, Abs. 2, 2 of the examination regulation.

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

**Prerequisites**

None

**Recommendation**

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required.

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

**Semantic Web Technologies**

2511310, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)  
On-Site**

**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 2024, 1 SWS, Language: English, [Open in study portal](#)

**Practice (Ü)  
On-Site**



**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.

**Organizational issues**

Die Übungen finden im Rahmen der Termine der Blockvorlesung statt.

**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

**7.196 Course: Seminar Creating a Patent Specification [T-ETIT-100754]**

**Responsible:** Prof. Dr. Wilhelm Stork  
**Organisation:** KIT Department of Electrical Engineering and Information Technology  
**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Recurrence	Version
Completed coursework	3	pass/fail	Each summer term	1

Events					
ST 2024	2311633	<a href="#">Seminar Creating a Patent Specification</a>	2 SWS	Seminar / 	Stork
Exams					
ST 2024	7311633	<a href="#">Seminar Creating a Patent Specification</a>	Stork		

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

**Prerequisites**

none

T

**7.197 Course: Seminar Data-Mining in Production [T-MACH-108737]**

**Responsible:** Prof. Dr.-Ing. Gisela Lanza  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2024	2151643	<a href="#">Seminar Data Mining in Production</a>	2 SWS	Seminar /	Lanza
WT 24/25	2151643	<a href="#">Seminar Data Mining in Production</a>	2 SWS	Seminar /	Lanza
Exams					
ST 2024	76-T-MACH-108737	<a href="#">Seminar Data-Mining in Production</a>			Lanza
WT 24/25	76-T-MACH-108737	<a href="#">Seminar Data-Mining in Production</a>			Lanza

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

**Competence Certificate**

alternative test achievement (graded):

- written elaboration (workload of at least 80 h)
- oral presentation (approx. 30 min)

**Prerequisites**

none

**Annotation**

The number of students is limited to twelve. Dates and deadlines for the seminar will be announced at <https://www.wbk.kit.edu/studium-und-lehre.php>.

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

V

**Seminar Data Mining in Production**

2151643, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)  
On-Site**

**Content**

In the age of Industry 4.0, large amounts of production data are generated by the global production networks and value chains. Their analysis enables valuable conclusions about production and lead to an increasing process efficiency. The aim of the seminar is to get to know production data analysis as an important component of future industrial projects. The students get to know the data mining tool KNIME and use it for analyses. A specific industrial use case with real production data enables practical work and offers direct references to industrial applications. The participants learn selected methods of data mining and apply them to the production data. The work within the seminar takes place in small groups on the computer. Subsequently, presentations on specific data mining methods have to be prepared.

**Learning Outcomes:**

The students ...

- can name, describe and distinguish between different methods, procedures and techniques of production data analysis.
- can perform basic data analyses with the data mining tool KNIME.
- can analyze and evaluate the results of data analyses in the production environment.
- are able to derive suitable recommendations for action.
- are able to explain and apply the CRISP-DM model.

**Workload:**

regular attendance: 10 hours  
self-study: 80 hours

**Organizational issues**

Die Teilnehmerzahl ist auf zwölf Studierende begrenzt. Termine und Fristen zur Veranstaltung werden unter <https://www.wbk.kit.edu/studium-und-lehre.php> bekanntgegeben.

The number of students is limited to twelve. Dates and deadlines for the seminar will be announced at <https://www.wbk.kit.edu/studium-und-lehre.php>.

**Literature****Medien:**

KNIME Analytics Platform

**Media:**

KNIME Analytics Platform

**Seminar Data Mining in Production**

2151643, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)  
On-Site**

**Content**

In the age of Industry 4.0, large amounts of production data are generated by the global production networks and value chains. Their analysis enables valuable conclusions about production and lead to an increasing process efficiency. The aim of the seminar is to get to know production data analysis as an important component of future industrial projects. The students get to know the data mining tool KNIME and use it for analyses. A specific industrial use case with real production data enables practical work and offers direct references to industrial applications. The participants learn selected methods of data mining and apply them to the production data. The work within the seminar takes place in small groups on the computer. Subsequently, presentations on specific data mining methods have to be prepared.

**Learning Outcomes:**

The students ...

- can name, describe and distinguish between different methods, procedures and techniques of production data analysis.
- can perform basic data analyses with the data mining tool KNIME.
- can analyze and evaluate the results of data analyses in the production environment.
- are able to derive suitable recommendations for action.
- are able to explain and apply the CRISP-DM model.

**Workload:**

regular attendance: 10 hours

self-study: 80 hours

**Organizational issues**

Die Teilnehmerzahl ist auf zwölf Studierende begrenzt. Termine und Fristen zur Veranstaltung werden unter <https://www.wbk.kit.edu/studium-und-lehre.php> bekanntgegeben.

The number of students is limited to twelve. Dates and deadlines for the seminar will be announced at <https://www.wbk.kit.edu/studium-und-lehre.php>.

**Literature****Medien:**

KNIME Analytics Platform

**Media:**

KNIME Analytics Platform





**7.198 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-106425 - Seminar Module

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2024	2400121	Interactive Analytics Seminar	2 SWS	/ 📱	Beigl, Mädche
ST 2024	2500020	Digital Democracy - Challenges and opportunities of the digital society	2 SWS	Seminar / 🔄	Fegert
ST 2024	2500024	Biosignals in Information Systems & Marketing	2 SWS	Seminar / 🔄	Knierim, del Puppo
ST 2024	2500027	Design Seminar: Digital Citizen Science	2 SWS	Seminar	Berens, Volkamer, Mädche
ST 2024	2500036	Affective User Research for Human-AI Interaction	2 SWS	Seminar / 🔄	Mädche
ST 2024	2500056	ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems	2 SWS	Seminar / 🔄	Mädche
ST 2024	2500125	Human-Centered Systems Seminar: Engineering	3 SWS	Seminar / 🔄	Mädche
ST 2024	2530580	Seminar in Finance (Master)	2 SWS	Seminar / 🗣️	Uhrig-Homburg, Müller
ST 2024	2540473	Business Data Analytics	2 SWS	Seminar	Hariharan
ST 2024	2540475	Platforms & Digital Experiences	2 SWS	Seminar	Knierim
ST 2024	2540478	Smart Grid Economics & Energy Markets	2 SWS	Seminar	Weinhardt
ST 2024	2540510	Master Seminar in Data Science and Machine Learning	2 SWS	Seminar	Geyer-Schulz
ST 2024	2540553	User-Adaptive Systems Seminar	2 SWS	Seminar / 🔄	Mädche, Beigl
ST 2024	2540557	Human-Centered Systems Seminar: Research	3 SWS	Seminar / 🔄	Mädche
ST 2024	2545002	Entrepreneurship Research	2 SWS	Seminar / 🗣️	Terzidis, Tittel, Rosales Bravo
ST 2024	2550493	Hospital Management	2 SWS	Block / 📱	Hansis
ST 2024	2571180	Seminar in Marketing and Sales (Master)	2 SWS	Seminar / 🗣️	Klarmann, Mitarbeiter
ST 2024	2571182	Seminar "The Future of Marketing" (Master)	2 SWS	Seminar / 🗣️	Kupfer
ST 2024	2579909	Seminar Management Accounting - Special Topics	2 SWS	Seminar / 🗣️	Wouters, Jaedeke, Kepl
ST 2024	2579919	Seminar Management Accounting - Sustainability Topics	2 SWS	Seminar / 🗣️	Letmathe
ST 2024	2581030	Seminar Energiewirtschaft IV	2 SWS	Seminar / 🗣️	Fichtner, Sloot
ST 2024	2581977	Seminar Produktionswirtschaft und Logistik II	2 SWS	Seminar / 🗣️	Volk, Schultmann
ST 2024	2581980	Seminar Energiewirtschaft II	2 SWS	Seminar / 🗣️	Fichtner, Finck
WT 24/25	00063	Seminar Social Sentiment in Times of Crises	2 SWS	Seminar	Fegert
WT 24/25	2500006	Digital Citizen Science	2 SWS	Seminar / 🗣️	Greif-Winzrieth
WT 24/25	2500045	Digital Democracy - Challenges and Opportunities of the Digital Society	2 SWS	Seminar / 🔄	Fegert, Stein, Bezzaoui, Pekkip

WT 24/25	2500125	Human-Centered Systems Seminar: Engineering	2 SWS	Seminar / 🌀	Mädche
WT 24/25	2530293		2 SWS	Seminar / 📱	Ruckes, Benz, Luedecke, Kohl
WT 24/25	2530586			Seminar / 🌀	Uhrig-Homburg, Molnar
WT 24/25	2540473	Business Data Analytics	2 SWS	Seminar / 🌀	Hariharan, Grote, Schulz, Motz
WT 24/25	2540475	Positive Information Systems	2 SWS	Seminar / 🌀	Knierim, del Puppo
WT 24/25	2540478	Smart Grids and Energy Markets	2 SWS	Seminar / 🌀	Weinhardt, Semmelmann, Miskiw
WT 24/25	2540510	Master Seminar in Data Science and Machine Learning	2 SWS	Seminar / 🌀	Geyer-Schulz, Nazemi
WT 24/25	2540557	Human-Centered Systems Seminar: Research	2 SWS	Seminar / 🌀	Mädche
WT 24/25	2550493	Hospital Management	2 SWS	Block / 📱	Hansis
WT 24/25	2571181	Seminar Digital Marketing (Master)	2 SWS	Seminar / 🌀	Kupfer
WT 24/25	2573012	Seminar Human Resource Management (Master)	2 SWS	Seminar / 🌀	Nieken, Mitarbeiter
WT 24/25	2573013	Seminar Human Resources and Organizations (Master)	2 SWS	Seminar / 🌀	Nieken, Mitarbeiter
WT 24/25	2579919	Seminar Management Accounting - Sustainability Topics	2 SWS	Seminar / 🌀	Wouters, Dickemann
WT 24/25	2581030	Seminar in Energy Economics	2 SWS	Seminar / 🌀	Fichtner, Slood
WT 24/25	2581976	Seminar in Production and Operations Management I	2 SWS	Seminar / 🌀	Schultmann, Rudi
WT 24/25	2581977	Seminar in Production and Operations Management II	2 SWS	Seminar / 🌀	Volk, Schultmann
WT 24/25	2581978	Seminar Produktionswirtschaft und Logistik III	2 SWS	Seminar / 🌀	Schultmann, Rosenberg
WT 24/25	2581979	Seminar in Energy Economics	2 SWS	Seminar / 🌀	Fichtner, Kleinebrahm
WT 24/25	2581980	Seminar in Energy Economics	2 SWS	Seminar / 🌀	Fichtner, Sandmeier
WT 24/25	2581981	Seminar in Energy Economics	2 SWS	Seminar / 🌀	Ardone, Fichtner, Slednev
<b>Exams</b>					
ST 2024	7900008	Hospital Management			Hansis
ST 2024	7900052	Entrepreneurship Research			Terzidis
ST 2024	7900127	Seminar in Finance (Master)			Uhrig-Homburg
ST 2024	7900167	Design Seminar: Digital Citizen Science			Volkamer, Mädche
ST 2024	7900190	Human-Centered Systems Seminar: Engineering			Mädche
ST 2024	7900214	Seminar Business Data Analytics			Weinhardt
ST 2024	7900233	Seminar in Marketing and Sales (Master)			Klarmann
ST 2024	7900240	Seminar "The Future of Marketing" (Master)			Kupfer
ST 2024	7900256	Seminar Positive Information Systems			Weinhardt
ST 2024	7900261	Human-Centered Systems Seminar: Research			Mädche
ST 2024	7900265	User-Adaptive Systems Seminar			Mädche
ST 2024	7900281	Affective User Research for Human-AI Interaction			Mädche
ST 2024	7900307	Service Design Thinking			Satzger
ST 2024	7900312	Practical Seminar Service Innovation			Satzger
ST 2024	7900313	Bond Markets - Models & Derivatives			Uhrig-Homburg
ST 2024	7900322	Practical Seminar: Data Science for Industrial Applications			Satzger
ST 2024	7900326	Market Design (MA)			Puppe
ST 2024	7900367	Barriers and Challenges to the Transition towards a Circular Ecosystem: A Systematic Literature Review			Satzger
ST 2024	7900370	ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems			Mädche
ST 2024	79-2579909-M	Seminar Management Accounting - Special Topics (Master)			Wouters

ST 2024	79-2579919-M	<a href="#">Seminar Management Accounting - Sustainability Topics (Master)</a>	Wouters
ST 2024	792581030	<a href="#">Seminar Energy Economics IV</a>	Fichtner
ST 2024	792581031	<a href="#">Seminar Energy Economics V</a>	Plötz
ST 2024	7981976	<a href="#">Seminar in Production and Operations Management I</a>	Schultmann
ST 2024	7981978	<a href="#">Seminar in Production and Operations Management III</a>	Schultmann
ST 2024	7981979	<a href="#">Seminar Energy Economics I</a>	Fichtner
ST 2024	7981980	<a href="#">Seminar Energy Economics II</a>	Fichtner
ST 2024	7981981	<a href="#">Seminar Energy Economics III</a>	Fichtner
WT 24/25	7900069	<a href="#">Human-Centered Systems Seminar: Engineering</a>	Mädche
WT 24/25	7900106	<a href="#">Hospital Management</a>	Hansis
WT 24/25	7900163	<a href="#">Seminar Human Resource Management (Master)</a>	Nieken
WT 24/25	7900164	<a href="#">Seminar Human Resources and Organizations (Master)</a>	Nieken
WT 24/25	7900184	<a href="#">Seminar in Finance (Master)</a>	Ruckes
WT 24/25	7900203	<a href="#">Seminar "Finance in a nutshell"</a>	Uhrig-Homburg
WT 24/25	7900233	<a href="#">Human-Centered Systems Seminar: Research</a>	Mädche
WT 24/25	7900318	<a href="#">Bond Markets - Models &amp; Derivatives</a>	Uhrig-Homburg
WT 24/25	7981977	<a href="#">Seminar in Production and Operations Management II</a>	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:

V

### Interactive Analytics Seminar

2400121, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

Online

**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

**Design Seminar: Digital Citizen Science**

2500027, SS 2024, 2 SWS, [Open in study portal](#)

**Seminar (S)**

**Content**

TBA

**Affective User Research for Human-AI Interaction**

2500036, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
Blended (On-Site/Online)**



### Content

User research aims to understand users' needs, behaviors, and attitudes to effectively inform the design and development of products or services. It is a key endeavor to learn how users experience digital technologies, what is working well and what is not, and identify gaps and future needs in order to personalize and improve the user experience. To design for positive user experiences, investigating affective user reactions (e.g., emotions, stress, flow) is of particular interest. Therefore, affective user research collects and analyzes behavioral data and affective reactions of users when engaging with products or services. With the growing amount of data and computing capabilities, artificial intelligence (AI) technologies are increasingly used in user research for the prediction of affective user states when interacting with digital technology.

The recent advances in artificial intelligence (AI), however, may not only support affective user research as a method of inquire, but it also has found its way into our daily lives as humans interact with it every day, for example, in form of recommendation engines on social media, in health applications, or as personal assistants based on large language models (LLMs) to receive text output for code completion, ideation, or writing. Interacting with AI-based digital technologies also triggers affective user reactions. However, these affective user reactions in Human-AI Interactions are yet to be understood.

In this seminar, participants will apply methods for affective user research on a particular type of Human-AI Interaction, the prompting of LLMs. LLM prompting is expected to become the up-and-coming form of interacting with AI in the future. To receive output from an LLM, users must send a prompt to the LLM. Given a prompt, an LLM responds incrementally with "tokens" (e.g., groups of letters, numbers, punctuation) which build the output. Structuring the prompt and receiving output influences the affective reactions of the user. Precisely, these user reactions should be investigated by the students participating in this seminar.

In the "Affective User Research for Human-AI Interaction" seminar, participating students will learn how to apply AI-based user research methods with a specific emphasis on the affective dimension when interacting with AI-based digital technologies. The goal of this seminar is to provide students with a unique set of skills in (1) quantitative data analysis, (2) knowledge about Human-AI Interaction and, in particular, LLM prompting, and (3) prediction of affective user states (e.g., emotions, stress) using state-of-the-art machine learning (ML) techniques. Students will leverage a dataset on Human-AI Interaction and gain in-depth knowledge from it as part of the seminar. The seminar emphasizes the importance of applying the aforementioned affective user research methods in an ethically compliant form. The core activities include:

- Learn the fundamentals of AI-based affective user research methods.
- Explore a dataset on Human-AI Interaction with the specific focus on the interplay of user behavior and affective user reactions.
- Developing AI-based supervised machine learning techniques for predicting user activities and affective user states.
- Present findings and insights to the seminar audience and discuss the results.

The seminar is held by Dr. Ivo Benke in cooperation with Dr. Lennard Schmidt. Both are experts from industry in the fields of affective user research, quantitative data analysis, and Human-AI Interaction.

### Learning Objectives

- Understand the potential of combining user behavior and affective user reaction data for affective user research.
- Develop hands-on knowledge by applying AI-based affective user research methods on a real-world dataset.
- Develop a deeper understanding of a prominent form of Human-AI Interaction (e.g., LLM prompting).
- Deliver a presentation in a scientific context in front of an auditorium.



### ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems

2500056, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)  
Blended (On-Site/Online)

### Content

**Background:** In the ABBA Summer School Seminar hosted at the Karlsruhe Decision & Design Lab (KD<sup>2</sup>Lab) at KIT, we aim to enable students to explore biosignal sensors for designing user-adaptive systems. This comprehensive three-day program is designed for both bachelor's and master's students who want to gain an understanding of biosignal and the development of user-adaptive systems. The learning objective is to design human-centered biosignal-adaptive systems to address user needs in learning scenarios.

**Course Content:** Throughout the summer school, students will learn the foundations of biosignal-adaptive systems through a series of lectures and apply the knowledge in practical group work. For the group work, we offer students two contexts for their research topics: literature research during thesis writing and programming with LLM. Aiming to address user challenges in these two contexts, we provide two biosignal sensors: EEG or eye-tracking sensors. By collecting biosignal data with the sensors, we encourage students to integrate cutting-edge AI algorithms for their design and implementation. In the end, students should present their results to showcase the functionality, innovation, and a prototype of their biosignal-adaptive systems.

**Learning Outcome:** By successfully achieving the learning objective, students will receive a certificate from KIT and will have the opportunity to apply their acquired skills and knowledge for further research.

The seminar will be held in a three-day format from 23th to 25th September with 3 ECTS. For any questions, please ask Luke ([shi.liu@kit.edu](mailto:shi.liu@kit.edu)) for more information!



### Human-Centered Systems Seminar: Engineering

2500125, SS 2024, 3 SWS, Language: English, [Open in study portal](#)

Seminar (S)  
Blended (On-Site/Online)

**Content**

Formerly known as "Current Topics in Digital Transformation"

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the human-centered systems lab (Prof. Mädche). Students will work on a dedicated topic in the context of human-centered systems and apply a pre-defined research method. A broad spectrum of topics is offered every semester, topics may range from creating an experimental design, analyzing collected data, or systematically comparing existing software prototypes in a specific field of interest.

**Master Seminar in Data Science and Machine Learning**

2540510, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)****User-Adaptive Systems Seminar**

2540553, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
Blended (On-Site/Online)****Content**

User-adaptive systems collect and analyze biosignals from users to recognize user states as a basis for adaptation. Thermic, mechanical, electric, acoustic, and optical signals are collected using sensors which are integrated in wearables, e.g. glasses, earphones, belts, or bracelets. The collected data is processed with analytics and machine learning techniques in order to determine short-term, evolving over time, and long-term user states in the form of user characteristics, affective-cognitive states, or behavior. Finally, the recognized user states are leveraged for realizing user-centric adaptations.

In this seminar, interdisciplinary teams of students design, develop, and evaluate a user-adaptive system prototype leveraging state-of-the-art hard- and software. This seminar follows an interdisciplinary approach. Students from the fields of computer science, information systems and industrial engineering & management collaborate in the prototype design, development, and evaluation.

The seminar is carried out in cooperation between Teco/Chair of Pervasive Computing Systems (Prof. Beigl) and the Institute of Information Systems and Marketing (h-lab, Prof. Mädche). It is offered as part of the DFG-funded graduate school "KD2School: Designing Adaptive Systems for Economic Decisions" (<https://kd2school.info/>)

Learning objectives of the seminar

- Explain what a user-adaptive system is and how it can be conceptualized
- Suggest and evaluate different design solutions for addressing the identified problem
- Build a user-adaptive system prototype using state-of-the-art hard- and software
- Perform a user-centric evaluation of the user-adaptive system prototype

**Prerequisites**

Strong analytical abilities and profound software development skills are required.

**Organizational issues**

Termine werden bekannt gegeben

**Literature**

Required literature will be made available in the seminar.

**Human-Centered Systems Seminar: Research**

2540557, SS 2024, 3 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
Blended (On-Site/Online)**

**Content**

Formerly known as "Information Systems and Service Design Seminar"

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the research group IS I (Prof. Mädche). The research group "Information Systems I" (IS I) headed by Prof. Mädche focuses in research, education, and innovation on designing interactive intelligent systems. It is positioned at the intersection of Information Systems and Human-Computer Interaction (HCI).

In the seminar, participants will get deeper insights in a contemporary research topic in the field of information systems, specifically interactive intelligent systems.

The actual seminar topics will be derived from current research activities of the research group. Our research assistants offer a rich set of topics from our research clusters (digital experience and participation, intelligent enterprise systems, or digital services design & innovation). Students can select among these topics individually depending on their personal interests. The seminar is carried out in the form of a literature-based thesis project. In the seminar, students will acquire the important methodological skills of running a systematic literature review.

**Learning Objectives**

- focus on a contemporary topic at the intersection of Information Systems and Human-Computer Interaction (HCI), specifically interactive intelligent systems
- carry out a structured literature search for a given topic
- aggregate the collected information in a suitable way to present and extract knowledge
- write a seminar thesis following academic writing standards
- deliver a presentation in a scientific context in front of an auditorium

**Prerequisites**

No specific prerequisites are required for the seminar.

**Literature**

Further literature will be made available in the seminar.

**Organizational issues**

Termine werden bekannt gegeben

**Entrepreneurship Research**

2545002, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**

**Content****Content**

In this course, the students choose from various relevant and current research topics in entrepreneurship and independently develop a topic that suits them in small teams. Initially, there is an introduction to standard methods such as systematic literature review, design science, qualitative and quantitative data analysis, and more. The seminar topic must be scientifically prepared and presented in 15-20 pages as part of a written elaboration. The seminar results are presented in a block event at the end of the semester (20 min + 10 min open discussion).

**Learning Objectives**

The foundations of independent scholarly work (literature review, argumentation + discussion, citation of literature sources, application of qualitative, quantitative, and simulation methods) are developed as part of the written elaboration. The competencies acquired in the seminar can be utilized in preparing for a potential master's thesis. Therefore, the seminar is mainly aimed at students who intend to write their thesis at the Chair of Entrepreneurship and Technology Management and wish to gain substantial experience in entrepreneurship research.

**Organizational issues**

Monday, 17.06.2024, 10.00-17.00

Thursday, 27.06.2024, 10.00-17.00

Thursday, 25.07.2024, 10.00-17.00

Registration is via the Wiwi-Portal.

**Literature**

Will be announced in the seminar.

**Hospital Management**2550493, SS 2024, 2 SWS, Language: German, [Open in study portal](#)**Block (B)  
Online****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.

**Organizational issues**

Das Seminar wird als Blockveranstaltung stattfinden. Die Termine werden bei der Anmeldung über das Wiwi-Portal bekanntgegeben.

**Seminar Management Accounting - Special Topics**2579909, SS 2024, 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. 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 is made up of the grade of the seminar paper, the presentation and the contributions in the seminar sessions.

**Required prior Courses:**

- The course requires a basic knowledge of finance and accounting.

**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 Management Accounting - Sustainability Topics**2579919, SS 2024, 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).

**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 is made up of the grade of the seminar paper, the presentation and the contributions in the seminar sessions.

**Required prior Courses:**

- The course requires a basic knowledge of finance and accounting.

**Note:**

- Maximum of 8 students.

**Organizational issues**

Geb.05.20, 2A-12.1; Termine werden bekannt gegeben

**Literature**

Will be announced in the course.



2530586, WS 24/25, SWS, Language: German, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

**Content**

Within this seminar eLearning videos are produced to different topics out of the contents of our lectures. The student gets in touch with scientific work. Through profound working on a specific scientific topic the student is meant to learn the foundations of scientific research and reasoning in particular in finance. Through conduction of the video the student becomes familiar with the fundamental techniques for presentations and foundations of scientific reasoning. In addition, the student earns rhetorical skills.

The success is monitored by the development of an eLearning video and by the writing of a project report (according to §4(2), 3 SPO).

The overall grade is made up of these partial performances.

**Recommendations:**

Knowledge of the content of the modules *Essentials of Finance* [WW3BWLFBV1] (for bachelor students) and *F1 (Finance)* [WW4BWLFBV1] (for master students) is assumed.

The total workload for this course is approximately 90 hours. For further information see German version.

**Organizational issues**

Kickoff am 21.10.24 um 16 Uhr, Zwischenpräsentation am 10.12.24, 16 Uhr und Abschlusspräsentation am 21.01.25, 17:45 Uhr am Campus B (Geb. 09.21), Raum 209

**Business Data Analytics**

2540473, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

**Content**

wird auf deutsch und englisch gehalten

**Organizational issues**

Blockveranstaltung, siehe WWW

<b>V</b>	<b>Master Seminar in Data Science and Machine Learning</b> 2540510, WS 24/25, 2 SWS, Language: German, <a href="#">Open in study portal</a>	<b>Seminar (S)</b> <b>Blended (On-Site/Online)</b>
<b>V</b>	<b>Hospital Management</b> 2550493, WS 24/25, 2 SWS, Language: German, <a href="#">Open in study portal</a>	<b>Block (B)</b> <b>Online</b>
<b>V</b>	<b>Seminar Human Resource Management (Master)</b> 2573012, WS 24/25, 2 SWS, Language: German, <a href="#">Open in study portal</a>	<b>Seminar (S)</b> <b>On-Site</b>

**Content**

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

**Aim**

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

**Workload**

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

**Literature**

Selected journal articles and books.

**Organizational issues**

Blockveranstaltung siehe Homepage

<b>V</b>	<b>Seminar Human Resources and Organizations (Master)</b> 2573013, WS 24/25, 2 SWS, Language: German, <a href="#">Open in study portal</a>	<b>Seminar (S)</b> <b>On-Site</b>
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**Content**

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

**Aim**

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

**Workload**

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

**Literature**

Selected journal articles and books.

**Organizational issues**

Blockveranstaltung siehe Homepage

**Seminar Management Accounting - Sustainability Topics**2579919, WS 24/25, 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 is made up of the grade of the seminar paper, the presentation and the contributions in the seminar sessions.

**Required prior Courses:**

- The course requires a basic knowledge of finance and accounting.

**Workload:**

- The total workload for this course is approximately 90 hours. For further information see German version.

**Note:**

- Maximum of 8 students.

**Organizational issues**

Ort und Zeit werden noch bekannt gegeben bzw. über ILIAS

**Literature**

Will be announced in the course.



**7.199 Course: Seminar in Business Administration B (Master) [T-WIWI-103476]****Responsible:** Professorenschaft des Fachbereichs Betriebswirtschaftslehre**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-106425 - Seminar Module](#)





Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2024	2500020	Digital Democracy - Challenges and opportunities of the digital society	2 SWS	Seminar /	Fegert
ST 2024	2500024	Biosignals in Information Systems & Marketing	2 SWS	Seminar /	Knierim, del Puppo
ST 2024	2500027	Design Seminar: Digital Citizen Science	2 SWS	Seminar	Berens, Volkamer, Mädche
ST 2024	2500036	Affective User Research for Human-AI Interaction	2 SWS	Seminar /	Mädche
ST 2024	2500056	ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems	2 SWS	Seminar /	Mädche
ST 2024	2500125	Human-Centered Systems Seminar: Engineering	3 SWS	Seminar /	Mädche
ST 2024	2530580	Seminar in Finance (Master)	2 SWS	Seminar /	Uhrig-Homburg, Müller
ST 2024	2540473	Business Data Analytics	2 SWS	Seminar	Hariharan
ST 2024	2540475	Platforms & Digital Experiences	2 SWS	Seminar	Knierim
ST 2024	2540478	Smart Grid Economics & Energy Markets	2 SWS	Seminar	Weinhardt
ST 2024	2540510	Master Seminar in Data Science and Machine Learning	2 SWS	Seminar	Geyer-Schulz
ST 2024	2540553	User-Adaptive Systems Seminar	2 SWS	Seminar /	Mädche, Beigl
ST 2024	2540557	Human-Centered Systems Seminar: Research	3 SWS	Seminar /	Mädche
ST 2024	2545002	Entrepreneurship Research	2 SWS	Seminar /	Terzidis, Tittel, Rosales Bravo
ST 2024	2550493	Hospital Management	2 SWS	Block /	Hansis
ST 2024	2571180	Seminar in Marketing and Sales (Master)	2 SWS	Seminar /	Klarmann, Mitarbeiter
ST 2024	2571182	Seminar "The Future of Marketing" (Master)	2 SWS	Seminar /	Kupfer
ST 2024	2579909	Seminar Management Accounting - Special Topics	2 SWS	Seminar /	Wouters, Jaedeke, Kepl
ST 2024	2579919	Seminar Management Accounting - Sustainability Topics	2 SWS	Seminar /	Letmathe
ST 2024	2581030	Seminar Energiewirtschaft IV	2 SWS	Seminar /	Fichtner, Sloot
ST 2024	2581977	Seminar Produktionswirtschaft und Logistik II	2 SWS	Seminar /	Volk, Schultmann
ST 2024	2581980	Seminar Energiewirtschaft II	2 SWS	Seminar /	Fichtner, Finck
WT 24/25	00063	Seminar Social Sentiment in Times of Crises	2 SWS	Seminar	Fegert
WT 24/25	2500006	Digital Citizen Science	2 SWS	Seminar /	Greif-Winzrieth
WT 24/25	2500045	Digital Democracy - Challenges and Opportunities of the Digital Society	2 SWS	Seminar /	Fegert, Stein, Bezzaoui, Pekkip
WT 24/25	2500125	Human-Centered Systems Seminar: Engineering	2 SWS	Seminar /	Mädche



WT 24/25	2530293		2 SWS	Seminar / 📱	Ruckes, Benz, Luedecke, Kohl
WT 24/25	2530586			Seminar / 🗣️	Uhrig-Homburg, Molnar
WT 24/25	2540473	Business Data Analytics	2 SWS	Seminar / 🗣️	Hariharan, Grote, Schulz, Motz
WT 24/25	2540475	Positive Information Systems	2 SWS	Seminar / 🗣️	Knierim, del Puppo
WT 24/25	2540478	Smart Grids and Energy Markets	2 SWS	Seminar / 🗣️	Weinhardt, Semmelmann, Miskiw
WT 24/25	2540510	Master Seminar in Data Science and Machine Learning	2 SWS	Seminar / 🗣️	Geyer-Schulz, Nazemi
WT 24/25	2540557	Human-Centered Systems Seminar: Research	2 SWS	Seminar / 🗣️	Mädche
WT 24/25	2550493	Hospital Management	2 SWS	Block / 📱	Hansis
WT 24/25	2571181	Seminar Digital Marketing (Master)	2 SWS	Seminar / 🗣️	Kupfer
WT 24/25	2573012	Seminar Human Resource Management (Master)	2 SWS	Seminar / 🗣️	Nieken, Mitarbeiter
WT 24/25	2573013	Seminar Human Resources and Organizations (Master)	2 SWS	Seminar / 🗣️	Nieken, Mitarbeiter
WT 24/25	2579919	Seminar Management Accounting - Sustainability Topics	2 SWS	Seminar / 🗣️	Wouters, Dickemann
WT 24/25	2581030	Seminar in Energy Economics	2 SWS	Seminar / 🗣️	Fichtner, Slood
WT 24/25	2581976	Seminar in Production and Operations Management I	2 SWS	Seminar / 🗣️	Schultmann, Rudi
WT 24/25	2581977	Seminar in Production and Operations Management II	2 SWS	Seminar / 🗣️	Volk, Schultmann
WT 24/25	2581978	Seminar Produktionswirtschaft und Logistik III	2 SWS	Seminar / 🗣️	Schultmann, Rosenberg
WT 24/25	2581979	Seminar in Energy Economics	2 SWS	Seminar / 🗣️	Fichtner, Kleinebrahm
WT 24/25	2581980	Seminar in Energy Economics	2 SWS	Seminar / 🗣️	Fichtner, Sandmeier
WT 24/25	2581981	Seminar in Energy Economics	2 SWS	Seminar / 🗣️	Ardone, Fichtner, Slednev
<b>Exams</b>					
ST 2024	7900008	Hospital Management			Hansis
ST 2024	7900052	Entrepreneurship Research			Terzidis
ST 2024	7900127	Seminar in Finance (Master)			Uhrig-Homburg
ST 2024	7900167	Design Seminar: Digital Citizen Science			Volkamer, Mädche
ST 2024	7900190	Human-Centered Systems Seminar: Engineering			Mädche
ST 2024	7900214	Seminar Business Data Analytics			Weinhardt
ST 2024	7900233	Seminar in Marketing and Sales (Master)			Klarmann
ST 2024	7900240	Seminar "The Future of Marketing" (Master)			Kupfer
ST 2024	7900256	Seminar Positive Information Systems			Weinhardt
ST 2024	7900261	Human-Centered Systems Seminar: Research			Mädche
ST 2024	7900265	User-Adaptive Systems Seminar			Mädche
ST 2024	7900281	Affective User Research for Human-AI Interaction			Mädche
ST 2024	7900307	Service Design Thinking			Satzger
ST 2024	7900312	Practical Seminar Service Innovation			Satzger
ST 2024	7900313	Bond Markets - Models & Derivatives			Uhrig-Homburg
ST 2024	7900322	Practical Seminar: Data Science for Industrial Applications			Satzger
ST 2024	7900367	Barriers and Challenges to the Transition towards a Circular Ecosystem: A Systematic Literature Review			Satzger
ST 2024	7900370	ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems			Mädche
ST 2024	79-2579909-M	Seminar Management Accounting - Special Topics (Master)			Wouters
ST 2024	79-2579919-M	Seminar Management Accounting - Sustainability Topics (Master)			Wouters
ST 2024	792581030	Seminar Energy Economics IV			Fichtner
ST 2024	792581031	Seminar Energy Economics V			Plötz

ST 2024	7981976	Seminar in Production and Operations Management I	Schultmann
ST 2024	7981978	Seminar in Production and Operations Management III	Schultmann
ST 2024	7981979	Seminar Energy Economics I	Fichtner
ST 2024	7981980	Seminar Energy Economics II	Fichtner
ST 2024	7981981	Seminar Energy Economics III	Fichtner
WT 24/25	7900069	Human-Centered Systems Seminar: Engineering	Mädche
WT 24/25	7900106	Hospital Management	Hansis
WT 24/25	7900163	Seminar Human Resource Management (Master)	Nieken
WT 24/25	7900164	Seminar Human Resources and Organizations (Master)	Nieken
WT 24/25	7900184	Seminar in Finance (Master)	Ruckes
WT 24/25	7900203	Seminar "Finance in a nutshell"	Uhrig-Homburg
WT 24/25	7900233	Human-Centered Systems Seminar: Research	Mädche
WT 24/25	7900318	Bond Markets - Models & Derivatives	Uhrig-Homburg
WT 24/25	7981977	Seminar in Production and Operations Management II	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:

V

**Design Seminar: Digital Citizen Science**

2500027, SS 2024, 2 SWS, [Open in study portal](#)

Seminar (S)

### Content

TBA

V

**Affective User Research for Human-AI Interaction**

2500036, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)  
Blended (On-Site/Online)

### Content

User research aims to understand users' needs, behaviors, and attitudes to effectively inform the design and development of products or services. It is a key endeavor to learn how users experience digital technologies, what is working well and what is not, and identify gaps and future needs in order to personalize and improve the user experience. To design for positive user experiences, investigating affective user reactions (e.g., emotions, stress, flow) is of particular interest. Therefore, affective user research collects and analyzes behavioral data and affective reactions of users when engaging with products or services. With the growing amount of data and computing capabilities, artificial intelligence (AI) technologies are increasingly used in user research for the prediction of affective user states when interacting with digital technology.

The recent advances in artificial intelligence (AI), however, may not only support affective user research as a method of inquire, but it also has found its way into our daily lives as humans interact with it every day, for example, in form of recommendation engines on social media, in health applications, or as personal assistants based on large language models (LLMs) to receive text output for code completion, ideation, or writing. Interacting with AI-based digital technologies also triggers affective user reactions. However, these affective user reactions in Human-AI Interactions are yet to be understood.

In this seminar, participants will apply methods for affective user research on a particular type of Human-AI Interaction, the prompting of LLMs. LLM prompting is expected to become the up-and-coming form of interacting with AI in the future. To receive output from an LLM, users must send a prompt to the LLM. Given a prompt, an LLM responds incrementally with "tokens" (e.g., groups of letters, numbers, punctuation) which build the output. Structuring the prompt and receiving output influences the affective reactions of the user. Precisely, these user reactions should be investigated by the students participating in this seminar.

In the "Affective User Research for Human-AI Interaction" seminar, participating students will learn how to apply AI-based user research methods with a specific emphasis on the affective dimension when interacting with AI-based digital technologies. The goal of this seminar is to provide students with a unique set of skills in (1) quantitative data analysis, (2) knowledge about Human-AI Interaction and, in particular, LLM prompting, and (3) prediction of affective user states (e.g., emotions, stress) using state-of-the-art machine learning (ML) techniques. Students will leverage a dataset on Human-AI Interaction and gain in-depth knowledge from it as part of the seminar. The seminar emphasizes the importance of applying the aforementioned affective user research methods in an ethically compliant form. The core activities include:

- Learn the fundamentals of AI-based affective user research methods.
- Explore a dataset on Human-AI Interaction with the specific focus on the interplay of user behavior and affective user reactions.
- Developing AI-based supervised machine learning techniques for predicting user activities and affective user states.
- Present findings and insights to the seminar audience and discuss the results.

The seminar is held by Dr. Ivo Benke in cooperation with Dr. Lennard Schmidt. Both are experts from industry in the fields of affective user research, quantitative data analysis, and Human-AI Interaction.

### Learning Objectives

- Understand the potential of combining user behavior and affective user reaction data for affective user research.
- Develop hands-on knowledge by applying AI-based affective user research methods on a real-world dataset.
- Develop a deeper understanding of a prominent form of Human-AI Interaction (e.g., LLM prompting).
- Deliver a presentation in a scientific context in front of an auditorium.



### ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems

2500056, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)  
Blended (On-Site/Online)

### Content

**Background:** In the ABBA Summer School Seminar hosted at the Karlsruhe Decision & Design Lab (KD<sup>2</sup>Lab) at KIT, we aim to enable students to explore biosignal sensors for designing user-adaptive systems. This comprehensive three-day program is designed for both bachelor's and master's students who want to gain an understanding of biosignal and the development of user-adaptive systems. The learning objective is to design human-centered biosignal-adaptive systems to address user needs in learning scenarios.

**Course Content:** Throughout the summer school, students will learn the foundations of biosignal-adaptive systems through a series of lectures and apply the knowledge in practical group work. For the group work, we offer students two contexts for their research topics: literature research during thesis writing and programming with LLM. Aiming to address user challenges in these two contexts, we provide two biosignal sensors: EEG or eye-tracking sensors. By collecting biosignal data with the sensors, we encourage students to integrate cutting-edge AI algorithms for their design and implementation. In the end, students should present their results to showcase the functionality, innovation, and a prototype of their biosignal-adaptive systems.

**Learning Outcome:** By successfully achieving the learning objective, students will receive a certificate from KIT and will have the opportunity to apply their acquired skills and knowledge for further research.

The seminar will be held in a three-day format from 23th to 25th September with 3 ECTS. For any questions, please ask Luke ([shi.liu@kit.edu](mailto:shi.liu@kit.edu)) for more information!



### Human-Centered Systems Seminar: Engineering

2500125, SS 2024, 3 SWS, Language: English, [Open in study portal](#)

Seminar (S)  
Blended (On-Site/Online)

**Content**

Formerly known as "Current Topics in Digital Transformation"

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the human-centered systems lab (Prof. Mädche). Students will work on a dedicated topic in the context of human-centered systems and apply a pre-defined research method. A broad spectrum of topics is offered every semester, topics may range from creating an experimental design, analyzing collected data, or systematically comparing existing software prototypes in a specific field of interest.

**Master Seminar in Data Science and Machine Learning**

2540510, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)****User-Adaptive Systems Seminar**

2540553, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
Blended (On-Site/Online)****Content**

User-adaptive systems collect and analyze biosignals from users to recognize user states as a basis for adaptation. Thermic, mechanical, electric, acoustic, and optical signals are collected using sensors which are integrated in wearables, e.g. glasses, earphones, belts, or bracelets. The collected data is processed with analytics and machine learning techniques in order to determine short-term, evolving over time, and long-term user states in the form of user characteristics, affective-cognitive states, or behavior. Finally, the recognized user states are leveraged for realizing user-centric adaptations.

In this seminar, interdisciplinary teams of students design, develop, and evaluate a user-adaptive system prototype leveraging state-of-the-art hard- and software. This seminar follows an interdisciplinary approach. Students from the fields of computer science, information systems and industrial engineering & management collaborate in the prototype design, development, and evaluation.

The seminar is carried out in cooperation between Teco/Chair of Pervasive Computing Systems (Prof. Beigl) and the Institute of Information Systems and Marketing (h-lab, Prof. Mädche). It is offered as part of the DFG-funded graduate school "KD2School: Designing Adaptive Systems for Economic Decisions" (<https://kd2school.info/>)

Learning objectives of the seminar

- Explain what a user-adaptive system is and how it can be conceptualized
- Suggest and evaluate different design solutions for addressing the identified problem
- Build a user-adaptive system prototype using state-of-the-art hard- and software
- Perform a user-centric evaluation of the user-adaptive system prototype

**Prerequisites**

Strong analytical abilities and profound software development skills are required.

**Organizational issues**

Termine werden bekannt gegeben

**Literature**

Required literature will be made available in the seminar.

**Human-Centered Systems Seminar: Research**

2540557, SS 2024, 3 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
Blended (On-Site/Online)**

**Content**

Formerly known as "Information Systems and Service Design Seminar"

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the research group IS I (Prof. Mädche). The research group "Information Systems I" (IS I) headed by Prof. Mädche focuses in research, education, and innovation on designing interactive intelligent systems. It is positioned at the intersection of Information Systems and Human-Computer Interaction (HCI).

In the seminar, participants will get deeper insights in a contemporary research topic in the field of information systems, specifically interactive intelligent systems.

The actual seminar topics will be derived from current research activities of the research group. Our research assistants offer a rich set of topics from our research clusters (digital experience and participation, intelligent enterprise systems, or digital services design & innovation). Students can select among these topics individually depending on their personal interests. The seminar is carried out in the form of a literature-based thesis project. In the seminar, students will acquire the important methodological skills of running a systematic literature review.

**Learning Objectives**

- focus on a contemporary topic at the intersection of Information Systems and Human-Computer Interaction (HCI), specifically interactive intelligent systems
- carry out a structured literature search for a given topic
- aggregate the collected information in a suitable way to present and extract knowledge
- write a seminar thesis following academic writing standards
- deliver a presentation in a scientific context in front of an auditorium

**Prerequisites**

No specific prerequisites are required for the seminar.

**Literature**

Further literature will be made available in the seminar.

**Organizational issues**

Termine werden bekannt gegeben

**Entrepreneurship Research**

2545002, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**

**Content****Content**

In this course, the students choose from various relevant and current research topics in entrepreneurship and independently develop a topic that suits them in small teams. Initially, there is an introduction to standard methods such as systematic literature review, design science, qualitative and quantitative data analysis, and more. The seminar topic must be scientifically prepared and presented in 15-20 pages as part of a written elaboration. The seminar results are presented in a block event at the end of the semester (20 min + 10 min open discussion).

**Learning Objectives**

The foundations of independent scholarly work (literature review, argumentation + discussion, citation of literature sources, application of qualitative, quantitative, and simulation methods) are developed as part of the written elaboration. The competencies acquired in the seminar can be utilized in preparing for a potential master's thesis. Therefore, the seminar is mainly aimed at students who intend to write their thesis at the Chair of Entrepreneurship and Technology Management and wish to gain substantial experience in entrepreneurship research.

**Organizational issues**

Monday, 17.06.2024, 10.00-17.00

Thursday, 27.06.2024, 10.00-17.00

Thursday, 25.07.2024, 10.00-17.00

Registration is via the Wiwi-Portal.

**Literature**

Will be announced in the seminar.

**Hospital Management**2550493, SS 2024, 2 SWS, Language: German, [Open in study portal](#)**Block (B)  
Online****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.

**Organizational issues**

Das Seminar wird als Blockveranstaltung stattfinden. Die Termine werden bei der Anmeldung über das Wiwi-Portal bekanntgegeben.

**Seminar Management Accounting - Special Topics**2579909, SS 2024, 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. 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 is made up of the grade of the seminar paper, the presentation and the contributions in the seminar sessions.

**Required prior Courses:**

- The course requires a basic knowledge of finance and accounting.

**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 Management Accounting - Sustainability Topics**2579919, SS 2024, 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).

**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 is made up of the grade of the seminar paper, the presentation and the contributions in the seminar sessions.

**Required prior Courses:**

- The course requires a basic knowledge of finance and accounting.

**Note:**

- Maximum of 8 students.

**Organizational issues**

Geb.05.20, 2A-12.1; Termine werden bekannt gegeben

**Literature**

Will be announced in the course.



2530586, WS 24/25, SWS, Language: German, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

**Content**

Within this seminar eLearning videos are produced to different topics out of the contents of our lectures. The student gets in touch with scientific work. Through profound working on a specific scientific topic the student is meant to learn the foundations of scientific research and reasoning in particular in finance. Through conduction of the video the student becomes familiar with the fundamental techniques for presentations and foundations of scientific reasoning. In addition, the student earns rhetorical skills.

The success is monitored by the development of an eLearning video and by the writing of a project report (according to §4(2), 3 SPO).

The overall grade is made up of these partial performances.

**Recommendations:**

Knowledge of the content of the modules *Essentials of Finance* [WW3BWLFBV1] (for bachelor students) and *F1 (Finance)* [WW4BWLFBV1] (for master students) is assumed.

The total workload for this course is approximately 90 hours. For further information see German version.

**Organizational issues**

Kickoff am 21.10.24 um 16 Uhr, Zwischenpräsentation am 10.12.24, 16 Uhr und Abschlusspräsentation am 21.01.25, 17:45 Uhr am Campus B (Geb. 09.21), Raum 209

**Business Data Analytics**

2540473, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

**Content**

wird auf deutsch und englisch gehalten

**Organizational issues**

Blockveranstaltung, siehe WWW

<b>V</b>	<b>Master Seminar in Data Science and Machine Learning</b> 2540510, WS 24/25, 2 SWS, Language: German, <a href="#">Open in study portal</a>	<b>Seminar (S) Blended (On-Site/Online)</b>
<b>V</b>	<b>Hospital Management</b> 2550493, WS 24/25, 2 SWS, Language: German, <a href="#">Open in study portal</a>	<b>Block (B) Online</b>
<b>V</b>	<b>Seminar Human Resource Management (Master)</b> 2573012, WS 24/25, 2 SWS, Language: German, <a href="#">Open in study portal</a>	<b>Seminar (S) On-Site</b>

**Content**

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

**Aim**

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

**Workload**

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

**Literature**

Selected journal articles and books.

**Organizational issues**

Blockveranstaltung siehe Homepage

<b>V</b>	<b>Seminar Human Resources and Organizations (Master)</b> 2573013, WS 24/25, 2 SWS, Language: German, <a href="#">Open in study portal</a>	<b>Seminar (S) On-Site</b>
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**Content**

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

**Aim**

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

**Workload**

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

**Literature**

Selected journal articles and books.

**Organizational issues**

Blockveranstaltung siehe Homepage



**Seminar Management Accounting - Sustainability Topics**2579919, WS 24/25, 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 is made up of the grade of the seminar paper, the presentation and the contributions in the seminar sessions.

**Required prior Courses:**

- The course requires a basic knowledge of finance and accounting.

**Workload:**

- The total workload for this course is approximately 90 hours. For further information see German version.

**Note:**

- Maximum of 8 students.

**Organizational issues**

Ort und Zeit werden noch bekannt gegeben bzw. über ILIAS

**Literature**

Will be announced in the course.

T

**7.200 Course: Seminar in Digital Economics Master [T-WIWI-112991]**

**Responsible:** Prof. Dr. Nora Szech  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-106408 - Digital Economics](#)

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

Events					
WT 24/25	2560142	<a href="#">Seminar Game Theory and Behavioral Economics (Master)</a>	2 SWS	Seminar / 🗣️	Rau, Rosar
WT 24/25	2560143	<a href="#">AI and Digitization for Society (Master)</a>	2 SWS	Seminar / 🔄	Zhao
Exams					
WT 24/25	7900140	<a href="#">Seminar Game Theory and Behavioral Economics (Master)</a>			Puppe
WT 24/25	7900296	<a href="#">Seminar AI and Digitization for Society (Master)</a>			Puppe

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

**Competence Certificate**

The assessment of success takes place in the form of an alternative exam assessment (presentation and term paper).

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

V

**Seminar Game Theory and Behavioral Economics (Master)**

2560142, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

**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.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Organizational issues**

Application is possible via <https://portal.wiwi.kit.edu/Seminare>

Kick-off: 23.10.24, 14.00 - 15.30 h, Bdg. 01.85, KD2Lab (1. floor über Außentreppe), Team Room

Presentations: 13.01.2025, 14.00 - 18.00 h, Bdg. 01.85, KD2Lab (1. floor über Außentreppe), Team Room

V

**AI and Digitization for Society (Master)**

2560143, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**Blended (On-Site/Online)**

**Content**

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Organizational issues**

Application is possible via <https://portal.wiwi.kit.edu/Seminare>

Kick-off: 23.10.2024, 11.00 - 12.00 (online)

Presentations: 17.01.2025, 14.00 - 18.00 h, Geb. 01.85, KD2Lab Team room

T

**7.201 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	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Exams			
ST 2024	7900051	<a href="#">Seminar in Economic Policy</a>	Ott
WT 24/25	7900212	<a href="#">Seminar in Economic Policy</a>	Ott

**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.

**7.202 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-106425 - Seminar Module

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2024	2500004	Predictive Data Analytics - An Introduction to Statistical Machine Learning	2 SWS	Seminar / 🎧	Schienle, Lerch
ST 2024	2520367	Strategische Entscheidungen	2 SWS	Seminar / 🔄	Ehrhart
ST 2024	2520536	Seminar in Economic Theory II	2 SWS	Seminar / 🎧	Ammann, Kretz, Okulicz
ST 2024	2520563	Wirtschaftstheoretisches Seminar III	2 SWS	Seminar / 🎧	Ammann, Kretz, Okulicz
ST 2024	2521310	Advanced Topics in Econometrics	2 SWS	Seminar	Schienle, Krüger, Buse, Rüter, Bracher
ST 2024	2560130	Seminar Public Finance	2 SWS	Block / 🔄	Wigger, Schmelzer
ST 2024	2560282	Seminar in economic policy	2 SWS	Seminar / 🎧	Ott, Assistenten
ST 2024	2560400	Seminar in Macroeconomics I	2 SWS	Seminar / 🔄	Brumm, Krause, Pegorari
ST 2024	2560552	Seminar Shaping AI and Digitization for Society (Master)	2 SWS	Seminar / 🔄	Zhao
WT 24/25	25000111	Statistics and Epidemics		Seminar / 🎧	Bracher
WT 24/25	2500024	Wirtschaftstheoretisches Seminar IV (Master)	2 SWS	Seminar / 🔄	Puppe, Kretz, Ammann, Okulicz
WT 24/25	2500047	Advanced Topics in Econometrics, Statistics and Data Science	2 SWS	Seminar	Schienle, Krüger, Buse, Rüter, Bracher
WT 24/25	2520405	Topics in Experimental Economics		Seminar / 🎧	Reiß, Peters
WT 24/25	2520500	Workshop on Economics, Finance and Statistics	2 SWS	Seminar	Puppe, Brumm, Nieken, Ott, Reiß, Ruckes, Schienle, Uhrig-Homburg, Wigger, Krüger
WT 24/25	2520563	Wirtschaftstheoretisches Seminar III (Master)	2 SWS	Seminar / 🎧	Ammann, Kretz
WT 24/25	2521310	Topics in Econometrics	2 SWS	Seminar	Schienle, Krüger, Rüter
WT 24/25	2560130	Seminar Public Finance	2 SWS	Seminar / 🔄	Wigger, Schmelzer
WT 24/25	2560142	Seminar Game Theory and Behavioral Economics (Master)	2 SWS	Seminar / 🎧	Rau, Rosar
WT 24/25	2560143	AI and Digitization for Society (Master)	2 SWS	Seminar / 🔄	Zhao
WT 24/25	2560282	Seminar in Economic Policy	2 SWS	Seminar / 🎧	Ott, Assistenten
WT 24/25	2560400	Seminar in Macroeconomics I	2 SWS	Seminar / 🔄	Brumm, Pegorari, Frank
WT 24/25	2561208	Selected aspects of European transport planning and -modelling	2 SWS	Seminar	Szimba
Exams					
ST 2024	7900004	Predictive Data Analytics - An Introduction to Statistical Machine Learning			Lerch
ST 2024	7900051	Seminar in Economic Policy			Ott
ST 2024	7900131	Shaping AI and Digitization for Society (Master)			Puppe

ST 2024	7900164	Seminar in Economics (Bachelor)	Mitusch
ST 2024	7900318	Seminar in Economics A (Master)	Ehrhart
ST 2024	7900331	Seminar: Networks in Economics (Master)	Puppe
ST 2024	7900363	Seminar in Macroeconomics I: Macroeconomic Implications of Artificial Intelligence	Brumm
ST 2024	7900369	Seminar on Topics in Digital Economics	Reiß, Hillenbrand
ST 2024	79100005	Topics in Experimental Economics	Reiß
ST 2024	79sefi2	Seminar Public Finance A (Master)	Wigger
WT 24/25	7900021	Seminar: How to Make Democracy Work? Voting Methods in Theory and Practice (Master)	Puppe
WT 24/25	7900090	Advanced Topics in Econometrics, Statistics and Data Science	Schienle
WT 24/25	7900140	Seminar Game Theory and Behavioral Economics (Master)	Puppe
WT 24/25	7900212	Seminar in Economic Policy	Ott
WT 24/25	7900296	Seminar AI and Digitization for Society (Master)	Puppe
WT 24/25	79sefi2	Seminar Public Finance A (Master)	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.

### 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

**Predictive Data Analytics - An Introduction to Statistical Machine Learning**

2500004, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**  
On-Site

### Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

V

**Advanced Topics in Econometrics**

2521310, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**

### Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

V

**Seminar Public Finance**

2560130, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Block (B)**  
Blended (On-Site/Online)

### Content

See German version.

### Organizational issues

Termine werden bekannt gegeben.

**Literature**

Literatur wird zu Beginn des jeweiligen Seminars vorgestellt.

**Seminar Shaping AI and Digitization for Society (Master)**

2560552, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**Blended (On-Site/Online)**

**Content**

Participation will be limited to 12 students.

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Econometrics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

The acceptance of students for the seminar via the platform <https://portal.wiwi.kit.edu/Seminare> is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Grading: Seminar Papers of 8–10 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (60%). Students can improve their grades by actively participating in the discussions of the presentations.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Organizational issues**

Registration via WiWi-Portal

Blockveranstaltungen:

Introductory Meeting April 17, 11.00 - 12.00 Uhr (online)

Seminar Presentations June 14, 2024, 14.00 - 18.30 Uhr (in person)

**Statistics and Epidemics**

25000111, WS 24/25, SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

**Content****Motivation**

Infectious disease epidemiology gives rise to a large variety of real-time data streams. During the COVID-19 pandemic, the interpretation and statistical analysis of these data has proven crucial, but also highly challenging. In this seminar, students will get to know central concepts of infectious disease surveillance and modelling from a statistical perspective. Following an overview of various aspects in the form of blocked lectures, students will choose a more specific topic for their seminar thesis.

**Learning Goals**

Students develop an understanding of central modeling tasks and methods, including

- estimation of reproductive numbers
- compartment models of disease spread
- nowcasting and short-term forecasting of disease spread
- detection of outbreaks
- diagnostic testing

Moreover, they get to know various data types commonly used in the analysis of disease spread.

**Logistics**

The project seminar is worth 4.5 credit points (Leistungspunkte). There will be three blocked lectures (approx. 135 minutes each) in the beginning of the lecture period. For the various topics covered, subjects for seminar theses will be proposed (and students are allowed to propose their own topics). Towards the end of the semester, students present their progress on the chosen topics to the group. Grades will be based on this presentation (25%) and the final report (75%).

**Organizational issues****Prerequisites**

Students should have a very good working knowledge of statistics, including proficiency in a programming language for applied data analysis. The lecture VWL3 Introduction to Econometrics is a prerequisite for the project seminar. Most available software in the field is in R, but in principle Python can be used as well. Advanced knowledge of biology, medicine or epidemiology is not required.

**Application Procedure**

Please submit a transcript of records as well as a short letter of motivation (roughly 200 words) via WIWI-Portal: <https://portal.wiwi.kit.edu/ys/8223>

Application time frame: July 20th, 2024 to September, 30th, 2024.

**Advanced Topics in Econometrics, Statistics and Data Science**

2500047, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)****Organizational issues**

Blockveranstaltung, Termine werden bekannt gegeben

**Topics in Experimental Economics**

2520405, WS 24/25, SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)  
On-Site****Organizational issues**

Blockseminar; Blücherstraße 17; Termine werden separat bekannt gegeben

**Literature**

Als Pflichtliteratur dienen ausgewählte Paper.

**Topics in Econometrics**

2521310, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)****Organizational issues**

Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

**Seminar Game Theory and Behavioral Economics (Master)**

2560142, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site****Content**

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Econometrics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Organizational issues**

Application is possible via <https://portal.wiwi.kit.edu/Seminare>

Kick-off: 23.10.24, 14.00 - 15.30 h, Bdg. 01.85, KD2Lab (1. floor über Außentreppe), Team Room

Presentations: 13.01.2025, 14.00 - 18.00 h, Bdg. 01.85, KD2Lab (1. floor über Außentreppe), Team Room

**AI and Digitization for Society (Master)**

2560143, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
Blended (On-Site/Online)**



**Content**

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Econometrics.

The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Organizational issues**

Application is possible via <https://portal.wiwi.kit.edu/Seminare>

Kick-off: 23.10.2024, 11.00 - 12.00 (online)

Presentations: 17.01.2025, 14.00 - 18.00 h, Geb. 01.85, KD2Lab Team room

## T

## 7.203 Course: Seminar in Economics B (Master) [T-WIWI-103477]

**Responsible:** Professorenschaft des Fachbereichs Volkswirtschaftslehre

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

**Part of:** M-WIWI-106425 - Seminar Module

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2024	2500004	Predictive Data Analytics - An Introduction to Statistical Machine Learning	2 SWS	Seminar / 🎤	Schienle, Lerch
ST 2024	2520367	Strategische Entscheidungen	2 SWS	Seminar / 🔄	Ehrhart
ST 2024	2520536	Seminar in Economic Theory II	2 SWS	Seminar / 🎤	Ammann, Kretz, Okulicz
ST 2024	2520563	Wirtschaftstheoretisches Seminar III	2 SWS	Seminar / 🎤	Ammann, Kretz, Okulicz
ST 2024	2521310	Advanced Topics in Econometrics	2 SWS	Seminar	Schienle, Krüger, Buse, Rüter, Bracher
ST 2024	2560130	Seminar Public Finance	2 SWS	Block / 🔄	Wigger, Schmelzer
ST 2024	2560259	Organisation and Management of Development Projects	2 SWS	Seminar / 🔄	Sieber
ST 2024	2560282	Seminar in economic policy	2 SWS	Seminar / 🎤	Ott, Assistenten
ST 2024	2560400	Seminar in Macroeconomics I	2 SWS	Seminar / 🔄	Brumm, Krause, Pegorari
ST 2024	2560552	Seminar Shaping AI and Digitization for Society (Master)	2 SWS	Seminar / 🔄	Zhao
WT 24/25	25000111	Statistics and Epidemics		Seminar / 🎤	Bracher
WT 24/25	2500024	Wirtschaftstheoretisches Seminar IV (Master)	2 SWS	Seminar / 🔄	Puppe, Kretz, Ammann, Okulicz
WT 24/25	2500047	Advanced Topics in Econometrics, Statistics and Data Science	2 SWS	Seminar	Schienle, Krüger, Buse, Rüter, Bracher
WT 24/25	2520405	Topics in Experimental Economics		Seminar / 🎤	Reiß, Peters
WT 24/25	2520500	Workshop on Economics, Finance and Statistics	2 SWS	Seminar	Puppe, Brumm, Nieken, Ott, Reiß, Ruckes, Schienle, Uhrig-Homburg, Wigger, Krüger
WT 24/25	2520563	Wirtschaftstheoretisches Seminar III (Master)	2 SWS	Seminar / 🎤	Ammann, Kretz
WT 24/25	2521310	Topics in Econometrics	2 SWS	Seminar	Schienle, Krüger, Rüter
WT 24/25	2560130	Seminar Public Finance	2 SWS	Seminar / 🔄	Wigger, Schmelzer
WT 24/25	2560142	Seminar Game Theory and Behavioral Economics (Master)	2 SWS	Seminar / 🎤	Rau, Rosar
WT 24/25	2560282	Seminar in Economic Policy	2 SWS	Seminar / 🎤	Ott, Assistenten
WT 24/25	2560400	Seminar in Macroeconomics I	2 SWS	Seminar / 🔄	Brumm, Pegorari, Frank
WT 24/25	2561208	Selected aspects of European transport planning and -modelling	2 SWS	Seminar	Szimba
Exams					
ST 2024	7900004	Predictive Data Analytics - An Introduction to Statistical Machine Learning			Lerch
ST 2024	7900051	Seminar in Economic Policy			Ott
ST 2024	7900131	Shaping AI and Digitization for Society (Master)			Puppe

ST 2024	7900164	Seminar in Economics (Bachelor)	Mitusch
ST 2024	7900320	Seminar in Economics B (Master)	Ehrhart
ST 2024	7900363	Seminar in Macroeconomics I: Macroeconomic Implications of Artificial Intelligence	Brumm
ST 2024	7900369	Seminar on Topics in Digital Economics	Reiß, Hillenbrand
ST 2024	79100005	Topics in Experimental Economics	Reiß
ST 2024	79sefi3	Seminar Public Finance B (Master)	Wigger
WT 24/25	7900090	Advanced Topics in Econometrics, Statistics and Data Science	Schienze
WT 24/25	7900140	Seminar Game Theory and Behavioral Economics (Master)	Puppe
WT 24/25	7900212	Seminar in Economic Policy	Ott
WT 24/25	7900296	Seminar AI and Digitization for Society (Master)	Puppe
WT 24/25	79sefi3	Seminar Public Finance B (Master)	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.

### 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

**Predictive Data Analytics - An Introduction to Statistical Machine Learning**

2500004, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

### Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

V

**Advanced Topics in Econometrics**

2521310, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**

### Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

V

**Seminar Public Finance**

2560130, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Block (B)**  
**Blended (On-Site/Online)**

### Content

See German version.

### Organizational issues

Termine werden bekannt gegeben.

### Literature

Literatur wird zu Beginn des jeweiligen Seminars vorgestellt.

**Seminar Shaping AI and Digitization for Society (Master)**2560552, SS 2024, 2 SWS, Language: English, [Open in study portal](#)**Seminar (S)  
Blended (On-Site/Online)****Content**

Participation will be limited to 12 students.

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Econometrics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

The acceptance of students for the seminar via the platform <https://portal.wiwi.kit.edu/Seminare> is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Grading: Seminar Papers of 8–10 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (60%). Students can improve their grades by actively participating in the discussions of the presentations.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Organizational issues**

Registration via WiWi-Portal

Blockveranstaltungen:

Introductory Meeting April 17, 11.00 - 12.00 Uhr (online)

Seminar Presentations June 14, 2024, 14.00 - 18.30 Uhr (in person)

**Statistics and Epidemics**25000111, WS 24/25, SWS, Language: English, [Open in study portal](#)**Seminar (S)  
On-Site****Content****Motivation**

Infectious disease epidemiology gives rise to a large variety of real-time data streams. During the COVID-19 pandemic, the interpretation and statistical analysis of these data has proven crucial, but also highly challenging. In this seminar, students will get to know central concepts of infectious disease surveillance and modelling from a statistical perspective. Following an overview of various aspects in the form of blocked lectures, students will choose a more specific topic for their seminar thesis.

**Learning Goals**

Students develop an understanding of central modeling tasks and methods, including

- estimation of reproductive numbers
- compartment models of disease spread
- nowcasting and short-term forecasting of disease spread
- detection of outbreaks
- diagnostic testing

Moreover, they get to know various data types commonly used in the analysis of disease spread.

**Logistics**

The project seminar is worth 4.5 credit points (Leistungspunkte). There will be three blocked lectures (approx. 135 minutes each) in the beginning of the lecture period. For the various topics covered, subjects for seminar theses will be proposed (and students are allowed to propose their own topics). Towards the end of the semester, students present their progress on the chosen topics to the group. Grades will be based on this presentation (25%) and the final report (75%).

**Organizational issues****Prerequisites**

Students should have a very good working knowledge of statistics, including proficiency in a programming language for applied data analysis. The lecture VWL3 Introduction to Econometrics is a prerequisite for the project seminar. Most available software in the field is in R, but in principle Python can be used as well. Advanced knowledge of biology, medicine or epidemiology is not required.

**Application Procedure**

Please submit a transcript of records as well as a short letter of motivation (roughly 200 words) via WIWI-Portal: <https://portal.wiwi.kit.edu/ys/8223>

Application time frame: July 20th, 2024 to September, 30th, 2024.

**Advanced Topics in Econometrics, Statistics and Data Science**

2500047, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)****Organizational issues**

Blockveranstaltung, Termine werden bekannt gegeben

**Topics in Experimental Economics**

2520405, WS 24/25, SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)  
On-Site****Organizational issues**

Blockseminar; Blücherstraße 17; Termine werden separat bekannt gegeben

**Literature**

Als Pflichtliteratur dienen ausgewählte Paper.

**Topics in Econometrics**

2521310, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)****Organizational issues**

Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

**Seminar Game Theory and Behavioral Economics (Master)**

2560142, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site****Content**

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Econometrics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Organizational issues**

Application is possible via <https://portal.wiwi.kit.edu/Seminare>

Kick-off: 23.10.24, 14.00 - 15.30 h, Bdg. 01.85, KD2Lab (1. floor über Außentreppe), Team Room

Presentations: 13.01.2025, 14.00 - 18.00 h, Bdg. 01.85, KD2Lab (1. floor über Außentreppe), Team Room

T

**7.204 Course: Seminar in Engineering Science Master (approval) [T-WIWI-108763]****Responsible:** Fachvertreter ingenieurwissenschaftlicher Fakultäten**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

**Competence Certificate**

See German version.

**Prerequisites**

See module description.

**Recommendation**

None

## T

## 7.205 Course: Seminar in Informatics A (Master) [T-WIWI-103479]





**Responsible:** Professorenschaft des Instituts AIFB  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-106425 - Seminar Module

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2024	2513103	Seminar Digital Twins (Master)	2 SWS	Seminar	Lazarova-Molnar, Jungmann
ST 2024	2513211	Seminar Business Information Systems (Master)	2 SWS	Seminar / 🗣️	Oberweis, Forell, Frister, Fritsch, Rybinski, Schreiber, Schüler, Ullrich
ST 2024	2513309	Seminar Knowledge Discovery and Data Mining (Master)	3 SWS	Seminar / 🗣️	Färber, Noullet, Saier, Popovic, Qu , Shao, Käfer, Kinder
ST 2024	2513311	Seminar Data Science & Real-time Big Data Analytics (Master)	2 SWS	Seminar / 🗣️	Färber, Käfer, Thoma
ST 2024	2513403	Seminar Emerging Trends in Internet Technologies (Master)	2 SWS	Seminar / 🗣️	Sunyaev, Toussaint, Brecker, Danylak
ST 2024	2513405	Seminar Emerging Trends in Digital Health (Master)	2 SWS	Seminar / 🗣️	Sunyaev, Toussaint, Brecker, Danylak
ST 2024	2513500	Cognitive Automobiles and Robots	2 SWS	Seminar / 🗣️	Schneider, Zöllner, Daaboul
ST 2024	2513553	Seminar E-Voting (Master)	2 SWS	Seminar / 🗣️	Beckert, Müller-Quade, Volkamer, Kirsten, Hilt, Dörre
WT 24/25	2400125	Security and Privacy Awareness	2 SWS	Seminar / 🗣️	Seidel-Saul, Volkamer, Boehm, Aldag, Veit
WT 24/25	2513105	Seminar Advanced Analytics for Road Traffic Noise (Master)	2 SWS	Seminar / 🗣️	Lazarova-Molnar, Demetgül
WT 24/25	2513107	Seminar Modeling and Simulation for Energy Systems (Master)	2 SWS	Seminar	Lazarova-Molnar, Mostafa
WT 24/25	2513313	Seminar Linked Data and the Semantic Web (Master)	3 SWS	Seminar / 🗣️	Käfer, Braun
WT 24/25	2513314	Seminar Real-World Challenges in Data Science and Analytics (Bachelor)	3 SWS	/ 🗣️	Käfer, Höllig, Thoma
WT 24/25	2513315	Seminar Real-World Challenges in Data Science and Analytics (Master)	3 SWS	/ 🗣️	Käfer, Höllig, Thoma
WT 24/25	2513451	Seminar Cooperative Autonomous Vehicles (Master)	2 SWS	Seminar / 🗣️	Vinel
WT 24/25	2513457	Seminar Collective Perception in Autonomous Driving (Master)	2 SWS	Seminar / 🗣️	Vinel
WT 24/25	2513500	Seminar Cognitive Automobiles and Robots (Master)	2 SWS	Seminar / 🗣️	Zöllner, Daaboul
WT 24/25	2513607	Seminar Knowledge Graphs and Large Language Models (Master)	2 SWS	Seminar / 🗣️	Sack, Gesese, Vafaie, Norouzi, Tan
Exams					
ST 2024	7900031	Seminar Selected Issues in Critical Information Infrastructures (Master)			Sunyaev
ST 2024	7900088	Seminar Business Information Systems (Master)			Oberweis
ST 2024	7900128	Seminar Emerging Trends in Internet Technologies (Master)			Sunyaev



ST 2024	7900146	Seminar Emerging Trends in Digital Health (Master)	Sunyaev
ST 2024	7900147	Cognitive Automobiles and Robots	Zöllner
ST 2024	7900190	Human-Centered Systems Seminar: Engineering	Mädche
ST 2024	7900191	Seminar Human Factors in Autonomous Driving (Master)	Vinel
ST 2024	7900198	Seminar Data Science & Real-Time Big Data Analytics (Master)	Färber
ST 2024	7900202	Seminar Knowledge Discovery and Data Mining (Master)	Käfer
ST 2024	7900203	Seminar Machine Learning in Autonomous Driving (Master)	Vinel
ST 2024	7900261	Human-Centered Systems Seminar: Research	Mädche
ST 2024	7900301	Seminar Modeling and Simulation	Lazarova-Molnar
ST 2024	7900305	Seminar Digital Twins (Master)	Lazarova-Molnar
ST 2024	7900370	ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems	Mädche
WT 24/25	7900035	Practical Course Digital Twins with Lego: Hands-on Workshop in Data-driven Simulation (Master)	Lazarova-Molnar
WT 24/25	7900069	Human-Centered Systems Seminar: Engineering	Mädche
WT 24/25	7900102	Advanced Lab Information Service Engineering (Master)	Sack
WT 24/25	7900119	Seminar Cognitive Automobiles and Robots	Zöllner
WT 24/25	7900121	Security and Privacy Awareness	Volkamer
WT 24/25	7900209	Seminar Digital Twins with Lego: Hands-on Workshop in Data-driven Simulation (Master)	Lazarova-Molnar
WT 24/25	7900215	Seminar Knowledge Graphs and Large Language Models (Master)	Käfer
WT 24/25	7900226	Seminar Modeling and Simulation for Energy Systems (Master)	Lazarova-Molnar
WT 24/25	7900233	Human-Centered Systems Seminar: Research	Mädche
WT 24/25	7900236	Seminar Advanced Analytics for Road Traffic Noise (Master)	Lazarova-Molnar
WT 24/25	7900245	Seminar Cooperative Autonomous Vehicles (Master)	Vinel
WT 24/25	7900274	Seminar Real-World Challenges in Data Science and Analytics (Master)	Sure-Vetter, Färber
WT 24/25	7900279	Seminar Collective Perception in Autonomous Driving (Master)	Vinel
WT 24/25	7900304	Seminar Linked Data and the Semantic Web (Master)	Färber
WT 24/25	7900356	Seminar Real-World Challenges in Data Science and Analytics (Master)	Sure-Vetter, Färber
WT 24/25	79AIFB_AIAD_C4	Seminar Artificial Intelligence for Autonomous Driving (Master)	Vinel

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

### Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

### Prerequisites

None.

### Recommendation

See seminar description in the course catalogue of the KIT (<https://campus.kit.edu/>)

### Annotation

Placeholder for seminars offered by the Institute AIFB.

Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: <https://portal.wiwi.kit.edu>.

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



V

**Seminar Digital Twins (Master)**

2513103, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**

**Content****Name:** Digital Twins (Master)**Size:** 10 students (with 10 different topics)**Workload:**

- 2 Lectures
- One presentation delivered + attendance of the other students' presentations
- One report

**Responsible Persons:** Michelle Jungmann, Sanja Lazarova-Molnar**Deliverables for Grade:**

- 1 report per student and topic (7-8 pages, IEEE Template, usage of Reference Manager – Zotero or EndNote)
- 25 min presentation per student plus 20 min discussion (focus on the presentation topic + presentation skills) = 45 minutes for each student

**Credits:** 3 credits**Format/ Structure of the Seminar:**

- 2 lectures on beginning of semester
- Students have 1 week time to provide a priority list of 5 presentation topics, distribution will be decided based on first come – first serve, ensuring that core topics are covered
- Students have time to work on the report and presentation during the semester
- Submission of all reports will be required 2 months after the intro lecture
- Presentations are done in blocks of 2 students per class, starting mid-June, presentations will be submitted at the day of the scheduled presentation

**Description:**

The seminar focuses on Digital Twins and data-driven modeling, with an additional goal of improving scientific research and presentation skills for Master students. The seminar targets different topics around the structure and function of Digital Twins as well as their use cases in areas like manufacturing, energy systems, healthcare and others. Additional aspects that we consider in this seminar are cognitive Digital Twins, as well as how data and human expertise can be combined in Digital Twins.

The seminar is structured as a literature review seminar so that each student can select a topic out of a predefined set. The student then writes a paper, as well as delivers a presentation on that topic, based on the provided starting literature and additional research.

**Topics:****1. What is a Digital Twin? (core topic)**

References:

- Fuller, Aidan, et al. "Digital twin: Enabling technologies, challenges and open research." *IEEE access* 8 (2020): 108952-108971.
- Tao, Fei, et al. "Digital twin in industry: State-of-the-art." *IEEE Transactions on industrial informatics* 15.4 (2018): 2405-2415.
- Mihai, Stefan, et al. "Digital twins: A survey on enabling technologies, challenges, trends and future prospects." *IEEE Communications Surveys & Tutorials* (2022).

**2. Digital Twins Architectures (core topic)**

References:

- Ashtari Talkhestani, Behrang, et al. "An architecture of an intelligent digital twin in a cyber-physical production system." *at-Automatisierungstechnik* 67.9 (2019): 762-782.
- Harper, K. Eric, Somayeh Malakuti, and Christopher Ganz. "Digital twin architecture and standards." (2019).
- Minerva, Roberto, Gyu Myoung Lee, and Noel Crespi. "Digital twin in the IoT context: A survey on technical features, scenarios, and architectural models." *Proceedings of the IEEE* 108.10 (2020): 1785-1824.

**3. Validation of Digital Twins (core topic)**

References:

- Worden, K., et al. "On digital twins, mirrors, and virtualizations: Frameworks for model verification and validation." *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering* 6.3 (2020): 030902.
- Hua, Edward Y., Sanja Lazarova-Molnar, and Deena P. Francis. "Validation of Digital Twins: Challenges and Opportunities." *2022 Winter Simulation Conference (WSC)*. IEEE, 2022.
- Darvishi, Hossein, Domenico Ciunzo, and Pierluigi Salvo Rossi. "Exploring a modular architecture for sensor validation in digital twins." *2022 IEEE Sensors*. IEEE, 2022.

**4. Modeling Formalisms for Digital Twins (core topic)**

References:

- Magargle, Ryan, et al. "A Simulation-Based Digital Twin for Model-Driven Health Monitoring and Predictive Maintenance of an Automotive Braking System." *Modelica*. 2017.
- Liu, Qing, et al. "A comparative study on digital twin models." *AIP Conference Proceedings*. Vol. 2073. No. 1. AIP Publishing, 2019.
- Li, Haobin, et al. "Three Carriages Driving the Development of Intelligent Digital Twins-Simulation Plus Optimization and Learning." *2021 Winter Simulation Conference (WSC)*. IEEE, 2021.

### 5. Digital Twins Data Requirements (core topic)

References:

- Durão, Luiz Fernando CS, et al. "Digital twin requirements in the context of industry 4.0." *Product Lifecycle Management to Support Industry 4.0: 15th IFIP WG 5.1 International Conference, PLM 2018, Turin, Italy, July 2-4, 2018, Proceedings 15*. Springer International Publishing, 2018.
- Qi, Qinglin, and Fei Tao. "Digital twin and big data towards smart manufacturing and industry 4.0: 360 degree comparison." *Ieee Access* 6 (2018): 3585-3593.

### 6. Digital Twins for Manufacturing Systems

References:

- Zhang, Chenyuan, et al. "A reconfigurable modeling approach for digital twin-based manufacturing system." *Procedia Cirp* 83 (2019): 118-125.
- Kritzinger, Werner, et al. "Digital Twin in manufacturing: A categorical literature review and classification." *Ifac-PapersOnline* 51.11 (2018): 1016-1022.
- Jaensch, Florian, et al. "Digital twins of manufacturing systems as a base for machine learning." *2018 25th International conference on mechatronics and machine vision in practice (M2VIP)*. IEEE, 2018.

### 7. Digital Twins for Energy Systems

References:

- Steindl, Gernot, et al. "Generic digital twin architecture for industrial energy systems." *Applied Sciences* 10.24 (2020): 8903.
- Granacher, Julia, et al. "Overcoming decision paralysis—A digital twin for decision making in energy system design." *Applied Energy* 306 (2022): 117954.
- Palensky, Peter, et al. "Digital twins and their use in future power systems." *Digital Twin* 1 (2022): 4.

### 8. Digital Twins in Healthcare

References:

- Alazab, Mamoun, et al. "Digital twins for healthcare 4.0-recent advances, architecture, and open challenges." *IEEE Consumer Electronics Magazine* (2022).
- Croatti, Angelo, et al. "On the integration of agents and digital twins in healthcare." *Journal of Medical Systems* 44 (2020): 1-8.
- Erol, Tolga, Arif Furkan Mendi, and Dilara Doğan. "The digital twin revolution in healthcare." *2020 4th international symposium on multidisciplinary studies and innovative technologies (ISMSIT)*. IEEE, 2020.

### 9. Digital Twins of City Infrastructures (in Smart Cities)

References:

- Deren, Li, Yu Wenbo, and Shao Zhenfeng. "Smart city based on digital twins." *Computational Urban Science* 1 (2021): 1-11.
- Deng, Tianhu, Keren Zhang, and Zuo-Jun Max Shen. "A systematic review of a digital twin city: A new pattern of urban governance toward smart cities." *Journal of Management Science and Engineering* 6.2 (2021): 125-134.
- Mylonas, Georgios, et al. "Digital twins from smart manufacturing to smart cities: A survey." *Ieee Access* 9 (2021): 143222-143249.

### 10. Digital Twins in Logistics

References:

- Moshood, Taofeeq D., et al. "Digital twins driven supply chain visibility within logistics: A new paradigm for future logistics." *Applied System Innovation* 4.2 (2021): 29.
- Agalianos, K., et al. "Discrete event simulation and digital twins: review and challenges for logistics." *Procedia Manufacturing* 51 (2020): 1636-1641.
- Korth, Benjamin, Christian Schwede, and Markus Zajac. "Simulation-ready digital twin for realtime management of logistics systems." *2018 IEEE international conference on big data (big data)*. IEEE, 2018.

### 11. Cognitive Digital Twins

References:

- Al Faruque, Mohammad Abdullah, et al. "Cognitive digital twin for manufacturing systems." *2021 Design, Automation & Test in Europe Conference & Exhibition (DATE)*. IEEE, 2021.

- Zhang, Nan, Rami Bahsoon, and Georgios Theodoropoulos. "Towards engineering cognitive digital twins with self-awareness." *2020 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*. IEEE, 2020.
- Zheng, Xiaochen, Jinzhi Lu, and Dimitris Kiritsis. "The emergence of cognitive digital twin: vision, challenges and opportunities." *International Journal of Production Research* 60.24 (2022): 7610-7632.

## 12. Fusing Data and Human Expert Knowledge in Digital Twins

References:

- Kulkarni, Vinay, Souvik Barat, and Tony Clark. "Towards adaptive enterprises using digital twins." *2019 winter simulation conference (WSC)*. IEEE, 2019.
- Vogel-Heuser, Birgit, et al. "Potential for combining semantics and data analysis in the context of digital twins." *Philosophical Transactions of the Royal Society A* 379.2207 (2021): 20200368.
- Todorovski, Ljupčo, and Sašo Džeroski. "Integrating knowledge-driven and data-driven approaches to modeling." *ecological modelling* 194.1-3 (2006): 3-13.



### Seminar Knowledge Discovery and Data Mining (Master)

2513309, SS 2024, 3 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**

#### 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
- Scientific Publications

Further Information: [https://aifb.kit.edu/web/Lehre/Praktikum\\_Knowledge\\_Discovery\\_and\\_Data\\_Science](https://aifb.kit.edu/web/Lehre/Praktikum_Knowledge_Discovery_and_Data_Science)

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)

2513311, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**

#### 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](mailto:sem-ep@fzi.de).

#### Organizational issues

Questions are answered via the e-mail address [sem-ep@fzi.de](mailto:sem-ep@fzi.de).

**Cognitive Automobiles and Robots**2513500, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)  
On-Site****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)**2513553, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)  
On-Site****Content**

What should a voting procedure fulfill? When is a voting procedure secure? Which components need to be examined? Which methods can be used to investigate this?

Cryptographic voting procedures and algorithmic voting (counting) procedures are examined from different perspectives (cryptographic methods, formal correctness, human factors).

This course can also be credited for the KASTEL certificate. Further information about obtaining the certificate can be found on the SECUSO website ([https://secuso.aifb.kit.edu/Studium\\_und\\_Lehre.php](https://secuso.aifb.kit.edu/Studium_und_Lehre.php)).

**Organizational issues**

Die Anmeldung für das Seminar ist bis zum 17.04. über <https://portal.wiwi.kit.edu/ys/8037> möglich.

**Security and Privacy Awareness**2400125, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)  
Blended (On-Site/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.

**Important notes:**

- Consider that legal-focused topics require you to speak and understand German legal texts
- The seminar is only for MASTER students (or Mastervorzug)
- The link to enrol is for every student, regardless of the study background

**Dates (not final):**

- Kick-Off: Tue, 22.10.2024, 11:30 Uhr, Raum 1C-03, Gebäude 5.20
- First version: 05.01.2025
- Final version: 23.02.2025
- Presentation: CW 12

**Topics:**

The advertised topics can be found in the wiwi portal [<https://portal.wiwi.kit.edu/ys/8308>]. They will be assigned after the kick-off.

**Seminar Advanced Analytics for Road Traffic Noise (Master)**2513105, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)**Seminar (S)  
On-Site****Content**

Road traffic noise (RTN) stands as a significant environmental pollutant encountered in daily life, profoundly impacting human health. Extensive research has empirically validated its detrimental effects on well-being, encompassing cardiovascular and mental health implications (Stansfeld et al., 2021; Lan et al., 2020). Moreover, regulatory bodies have proposed guidelines and regulations (WHO, 2018; EU, 2019) to mitigate environmental noise exposure, prompting stakeholders like vehicle manufacturers to integrate measures addressing road traffic noise into their design frameworks.

In this seminar, we diverge from the regulatory perspective on RTN and instead delve into its comprehension through data analytics and other techniques. Specifically, we present a guideline for understanding this societal concern and discuss existing road traffic noise modeling (RTNM) approaches, in particular, their formulation and considerations.

**Topics:**

1. Introduction to RTN
2. Overview on RTNM
3. Time series analysis
4. Data exploration and visualization
5. Machine learning for RTNM
6. Sound feature extraction and analysis

**Literature**

- Stansfeld, S., Clark, C., Smuk, M., Gallacher, J., & Babisch, W. (2021). Road traffic noise, noise sensitivity, noise annoyance, psychological and physical health and mortality. *Environmental Health*, 20, 1-15.
- Lan, Y., Roberts, H., Kwan, M. P., & Helbich, M. (2020). Transportation noise exposure and anxiety: A systematic review and meta-analysis. *Environmental research*, 191, 110118.
- WHO. (2018) Environmental Noise Guidelines for the European Region.
- EU. (2019) Regulation (EU) No 540/2014 of the European Parliament and of the Council of 16 April 2014 on the Sound Level of Motor Vehicles and of Replacement Silencing Systems, and Amending Directive 2007/46/EC and Repealing Directive 70/157/EEC.

**Seminar Linked Data and the Semantic Web (Master)**2513313, WS 24/25, 3 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)  
On-Site****Content**

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

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

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

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

Topics of interest include, but are not limited to:

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

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

**Seminar Real-World Challenges in Data Science and Analytics (Bachelor)**2513314, WS 24/25, 3 SWS, Language: German/English, [Open in study portal](#)**On-Site**

**Content**

In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

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

**Seminar Real-World Challenges in Data Science and Analytics (Master)**

2513315, WS 24/25, 3 SWS, Language: German/English, [Open in study portal](#)

**On-Site****Content**

In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

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

**Seminar Cognitive Automobiles and Robots (Master)**

2513500, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)  
Blended (On-Site/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 Knowledge Graphs and Large Language Models (Master)**

2513607, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**

**Content**

Large language models (LLMs) such as GPT-3 have shown remarkable capabilities in transforming various natural language processing (NLP) tasks across different domains. However, LLMs often generate incorrect answers, known as hallucinations, posing significant challenges to their usability and reliability. Additionally, LLMs operate as black boxes, making it difficult to understand how they arrive at specific conclusions, leading to transparency and explainability issues. Combining LLMs with KGs creates a powerful synergy that significantly enhances the capabilities of artificial intelligence across various tasks. This integration leverages the strengths of both technologies, with LLMs excelling at understanding and generating human-like text, and KGs providing structured, reliable information about entities and their relationships. Together, they offer a robust approach to problem-solving across diverse domains.

This seminar will focus on the intersection of LLMs and KGs, covering areas of interest including, but not limited to:

- KG completion using LLMs
- Question answering with KGs and LLMs
- Explainability of LLMs with KG integration
- Reasoning with LLMs and KGs
- Enhanced prompt engineering using KGs

**Contributions of the students:**

Each student will be assigned one paper on the topic, which could be a research paper discussing a novel approach or a resource paper presenting datasets, tools, etc. The student will be responsible for the following tasks:

1. **Report Writing:** Read the assigned paper thoroughly and write a 15-page seminar report explaining the methods and findings in their own words.
2. **Presenting:** Prepare and deliver a seminar presentation to share insights from the paper with other seminar participants.
3. **Conducting Experiments:** If the authors provide code, re-implement it for small-scale experiments using Google Colab or make the implementation available via GitHub.



## T

## 7.206 Course: Seminar in Informatics B (Master) [T-WIWI-103480]

**Responsible:** Professorenschaft des Instituts AIFB  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-106425 - Seminar Module

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2024	2513103	Seminar Digital Twins (Master)	2 SWS	Seminar	Lazarova-Molnar, Jungmann
ST 2024	2513211	Seminar Business Information Systems (Master)	2 SWS	Seminar / 🗣️	Oberweis, Forell, Frister, Fritsch, Rybinski, Schreiber, Schüler, Ullrich
ST 2024	2513309	Seminar Knowledge Discovery and Data Mining (Master)	3 SWS	Seminar / 🗣️	Färber, Noullet, Saier, Popovic, Qu , Shao, Käfer, Kinder
ST 2024	2513311	Seminar Data Science & Real-time Big Data Analytics (Master)	2 SWS	Seminar / 🗣️	Färber, Käfer, Thoma
ST 2024	2513403	Seminar Emerging Trends in Internet Technologies (Master)	2 SWS	Seminar / 🗣️	Sunyaev, Toussaint, Brecker, Danylak
ST 2024	2513405	Seminar Emerging Trends in Digital Health (Master)	2 SWS	Seminar / 🗣️	Sunyaev, Toussaint, Brecker, Danylak
ST 2024	2513500	Cognitive Automobiles and Robots	2 SWS	Seminar / 🗣️	Schneider, Zöllner, Daaboul
ST 2024	2513553	Seminar E-Voting (Master)	2 SWS	Seminar / 🗣️	Beckert, Müller-Quade, Volkamer, Kirsten, Hilt, Dörre
WT 24/25	2400125	Security and Privacy Awareness	2 SWS	Seminar / 🗣️	Seidel-Saul, Volkamer, Boehm, Aldag, Veit
WT 24/25	2513105	Seminar Advanced Analytics for Road Traffic Noise (Master)	2 SWS	Seminar / 🗣️	Lazarova-Molnar, Demetgül
WT 24/25	2513107	Seminar Modeling and Simulation for Energy Systems (Master)	2 SWS	Seminar	Lazarova-Molnar, Mostafa
WT 24/25	2513313	Seminar Linked Data and the Semantic Web (Master)	3 SWS	Seminar / 🗣️	Käfer, Braun
WT 24/25	2513314	Seminar Real-World Challenges in Data Science and Analytics (Bachelor)	3 SWS	/ 🗣️	Käfer, Höllig, Thoma
WT 24/25	2513315	Seminar Real-World Challenges in Data Science and Analytics (Master)	3 SWS	/ 🗣️	Käfer, Höllig, Thoma
WT 24/25	2513451	Seminar Cooperative Autonomous Vehicles (Master)	2 SWS	Seminar / 🗣️	Vinel
WT 24/25	2513457	Seminar Collective Perception in Autonomous Driving (Master)	2 SWS	Seminar / 🗣️	Vinel
WT 24/25	2513500	Seminar Cognitive Automobiles and Robots (Master)	2 SWS	Seminar / 🗣️	Zöllner, Daaboul
WT 24/25	2513607	Seminar Knowledge Graphs and Large Language Models (Master)	2 SWS	Seminar / 🗣️	Sack, Gesese, Vafaie, Norouzi, Tan
Exams					
ST 2024	7900031	Seminar Selected Issues in Critical Information Infrastructures (Master)			Sunyaev
ST 2024	7900088	Seminar Business Information Systems (Master)			Oberweis
ST 2024	7900128	Seminar Emerging Trends in Internet Technologies (Master)			Sunyaev

ST 2024	7900146	Seminar Emerging Trends in Digital Health (Master)	Sunyaev
ST 2024	7900147	Cognitive Automobiles and Robots	Zöllner
ST 2024	7900191	Seminar Human Factors in Autonomous Driving (Master)	Vinel
ST 2024	7900198	Seminar Data Science & Real-Time Big Data Analytics (Master)	Färber
ST 2024	7900202	Seminar Knowledge Discovery and Data Mining (Master)	Käfer
ST 2024	7900203	Seminar Machine Learning in Autonomous Driving (Master)	Vinel
ST 2024	7900301	Seminar Modeling and Simulation	Lazarova-Molnar
ST 2024	7900305	Seminar Digital Twins (Master)	Lazarova-Molnar
WT 24/25	7500220	Seminar Ubiquitous Computing	Beigl
WT 24/25	7900035	Practical Course Digital Twins with Lego: Hands-on Workshop in Data-driven Simulation (Master)	Lazarova-Molnar
WT 24/25	7900102	Advanced Lab Information Service Engineering (Master)	Sack
WT 24/25	7900119	Seminar Cognitive Automobiles and Robots	Zöllner
WT 24/25	7900121	Security and Privacy Awareness	Volkamer
WT 24/25	7900209	Seminar Digital Twins with Lego: Hands-on Workshop in Data-driven Simulation (Master)	Lazarova-Molnar
WT 24/25	7900215	Seminar Knowledge Graphs and Large Language Models (Master)	Käfer
WT 24/25	7900226	Seminar Modeling and Simulation for Energy Systems (Master)	Lazarova-Molnar
WT 24/25	7900236	Seminar Advanced Analytics for Road Traffic Noise (Master)	Lazarova-Molnar
WT 24/25	7900245	Seminar Cooperative Autonomous Vehicles (Master)	Vinel
WT 24/25	7900274	Seminar Real-World Challenges in Data Science and Analytics (Master)	Sure-Vetter, Färber
WT 24/25	7900279	Seminar Collective Perception in Autonomous Driving (Master)	Vinel
WT 24/25	7900304	Seminar Linked Data and the Semantic Web (Master)	Färber
WT 24/25	7900356	Seminar Real-World Challenges in Data Science and Analytics (Master)	Sure-Vetter, Färber
WT 24/25	79AIFB_AIAD_C4	Seminar Artificial Intelligence for Autonomous Driving (Master)	Vinel

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:

	<b>Seminar Digital Twins (Master)</b> 2513103, SS 2024, 2 SWS, Language: English, <a href="#">Open in study portal</a>	<b>Seminar (S)</b>
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**Content****Name:** Digital Twins (Master)**Size:** 10 students (with 10 different topics)**Workload:**

- 2 Lectures
- One presentation delivered + attendance of the other students' presentations
- One report

**Responsible Persons:** Michelle Jungmann, Sanja Lazarova-Molnar**Deliverables for Grade:**

- 1 report per student and topic (7-8 pages, IEEE Template, usage of Reference Manager – Zotero or EndNote)
- 25 min presentation per student plus 20 min discussion (focus on the presentation topic + presentation skills) = 45 minutes for each student

**Credits:** 3 credits**Format/ Structure of the Seminar:**

- 2 lectures on beginning of semester
- Students have 1 week time to provide a priority list of 5 presentation topics, distribution will be decided based on first come – first serve, ensuring that core topics are covered
- Students have time to work on the report and presentation during the semester
- Submission of all reports will be required 2 months after the intro lecture
- Presentations are done in blocks of 2 students per class, starting mid-June, presentations will be submitted at the day of the scheduled presentation

**Description:**

The seminar focuses on Digital Twins and data-driven modeling, with an additional goal of improving scientific research and presentation skills for Master students. The seminar targets different topics around the structure and function of Digital Twins as well as their use cases in areas like manufacturing, energy systems, healthcare and others. Additional aspects that we consider in this seminar are cognitive Digital Twins, as well as how data and human expertise can be combined in Digital Twins.

The seminar is structured as a literature review seminar so that each student can select a topic out of a predefined set. The student then writes a paper, as well as delivers a presentation on that topic, based on the provided starting literature and additional research.

**Topics:****1. What is a Digital Twin? (core topic)**

References:

- Fuller, Aidan, et al. "Digital twin: Enabling technologies, challenges and open research." *IEEE access* 8 (2020): 108952-108971.
- Tao, Fei, et al. "Digital twin in industry: State-of-the-art." *IEEE Transactions on industrial informatics* 15.4 (2018): 2405-2415.
- Mihai, Stefan, et al. "Digital twins: A survey on enabling technologies, challenges, trends and future prospects." *IEEE Communications Surveys & Tutorials* (2022).

**2. Digital Twins Architectures (core topic)**

References:

- Ashtari Talkhestani, Behrang, et al. "An architecture of an intelligent digital twin in a cyber-physical production system." *at-Automatisierungstechnik* 67.9 (2019): 762-782.
- Harper, K. Eric, Somayeh Malakuti, and Christopher Ganz. "Digital twin architecture and standards." (2019).
- Minerva, Roberto, Gyu Myoung Lee, and Noel Crespi. "Digital twin in the IoT context: A survey on technical features, scenarios, and architectural models." *Proceedings of the IEEE* 108.10 (2020): 1785-1824.

**3. Validation of Digital Twins (core topic)**

References:

- Worden, K., et al. "On digital twins, mirrors, and virtualizations: Frameworks for model verification and validation." *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering* 6.3 (2020): 030902.
- Hua, Edward Y., Sanja Lazarova-Molnar, and Deena P. Francis. "Validation of Digital Twins: Challenges and Opportunities." *2022 Winter Simulation Conference (WSC)*. IEEE, 2022.
- Darvishi, Hossein, Domenico Ciunzo, and Pierluigi Salvo Rossi. "Exploring a modular architecture for sensor validation in digital twins." *2022 IEEE Sensors*. IEEE, 2022.

**4. Modeling Formalisms for Digital Twins (core topic)**

References:

- Magargle, Ryan, et al. "A Simulation-Based Digital Twin for Model-Driven Health Monitoring and Predictive Maintenance of an Automotive Braking System." *Modelica*. 2017.
- Liu, Qing, et al. "A comparative study on digital twin models." *AIP Conference Proceedings*. Vol. 2073. No. 1. AIP Publishing, 2019.
- Li, Haobin, et al. "Three Carriages Driving the Development of Intelligent Digital Twins-Simulation Plus Optimization and Learning." *2021 Winter Simulation Conference (WSC)*. IEEE, 2021.

### 5. Digital Twins Data Requirements (core topic)

References:

- Durão, Luiz Fernando CS, et al. "Digital twin requirements in the context of industry 4.0." *Product Lifecycle Management to Support Industry 4.0: 15th IFIP WG 5.1 International Conference, PLM 2018, Turin, Italy, July 2-4, 2018, Proceedings 15*. Springer International Publishing, 2018.
- Qi, Qinglin, and Fei Tao. "Digital twin and big data towards smart manufacturing and industry 4.0: 360 degree comparison." *Ieee Access* 6 (2018): 3585-3593.

### 6. Digital Twins for Manufacturing Systems

References:

- Zhang, Chenyuan, et al. "A reconfigurable modeling approach for digital twin-based manufacturing system." *Procedia Cirp* 83 (2019): 118-125.
- Kritzinger, Werner, et al. "Digital Twin in manufacturing: A categorical literature review and classification." *Ifac-PapersOnline* 51.11 (2018): 1016-1022.
- Jaensch, Florian, et al. "Digital twins of manufacturing systems as a base for machine learning." *2018 25th International conference on mechatronics and machine vision in practice (M2VIP)*. IEEE, 2018.

### 7. Digital Twins for Energy Systems

References:

- Steindl, Gernot, et al. "Generic digital twin architecture for industrial energy systems." *Applied Sciences* 10.24 (2020): 8903.
- Granacher, Julia, et al. "Overcoming decision paralysis—A digital twin for decision making in energy system design." *Applied Energy* 306 (2022): 117954.
- Palensky, Peter, et al. "Digital twins and their use in future power systems." *Digital Twin* 1 (2022): 4.

### 8. Digital Twins in Healthcare

References:

- Alazab, Mamoun, et al. "Digital twins for healthcare 4.0-recent advances, architecture, and open challenges." *IEEE Consumer Electronics Magazine* (2022).
- Croatti, Angelo, et al. "On the integration of agents and digital twins in healthcare." *Journal of Medical Systems* 44 (2020): 1-8.
- Erol, Tolga, Arif Furkan Mendi, and Dilara Doğan. "The digital twin revolution in healthcare." *2020 4th international symposium on multidisciplinary studies and innovative technologies (ISMSIT)*. IEEE, 2020.

### 9. Digital Twins of City Infrastructures (in Smart Cities)

References:

- Deren, Li, Yu Wenbo, and Shao Zhenfeng. "Smart city based on digital twins." *Computational Urban Science* 1 (2021): 1-11.
- Deng, Tianhu, Keren Zhang, and Zuo-Jun Max Shen. "A systematic review of a digital twin city: A new pattern of urban governance toward smart cities." *Journal of Management Science and Engineering* 6.2 (2021): 125-134.
- Mylonas, Georgios, et al. "Digital twins from smart manufacturing to smart cities: A survey." *Ieee Access* 9 (2021): 143222-143249.

### 10. Digital Twins in Logistics

References:

- Moshood, Taofeeq D., et al. "Digital twins driven supply chain visibility within logistics: A new paradigm for future logistics." *Applied System Innovation* 4.2 (2021): 29.
- Agalinos, K., et al. "Discrete event simulation and digital twins: review and challenges for logistics." *Procedia Manufacturing* 51 (2020): 1636-1641.
- Korth, Benjamin, Christian Schwede, and Markus Zajac. "Simulation-ready digital twin for realtime management of logistics systems." *2018 IEEE international conference on big data (big data)*. IEEE, 2018.

### 11. Cognitive Digital Twins

References:

- Al Faruque, Mohammad Abdullah, et al. "Cognitive digital twin for manufacturing systems." *2021 Design, Automation & Test in Europe Conference & Exhibition (DATE)*. IEEE, 2021.

- Zhang, Nan, Rami Bahsoon, and Georgios Theodoropoulos. "Towards engineering cognitive digital twins with self-awareness." *2020 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*. IEEE, 2020.
- Zheng, Xiaochen, Jinzhi Lu, and Dimitris Kiritsis. "The emergence of cognitive digital twin: vision, challenges and opportunities." *International Journal of Production Research* 60.24 (2022): 7610-7632.

## 12. Fusing Data and Human Expert Knowledge in Digital Twins

References:

- Kulkarni, Vinay, Souvik Barat, and Tony Clark. "Towards adaptive enterprises using digital twins." *2019 winter simulation conference (WSC)*. IEEE, 2019.
- Vogel-Heuser, Birgit, et al. "Potential for combining semantics and data analysis in the context of digital twins." *Philosophical Transactions of the Royal Society A* 379.2207 (2021): 20200368.
- Todorovski, Ljupčo, and Sašo Džeroski. "Integrating knowledge-driven and data-driven approaches to modeling." *ecological modelling* 194.1-3 (2006): 3-13.



### Seminar Knowledge Discovery and Data Mining (Master)

2513309, SS 2024, 3 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**

#### 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
- Scientific Publications

Further Information: [https://aifb.kit.edu/web/Lehre/Praktikum\\_Knowledge\\_Discovery\\_and\\_Data\\_Science](https://aifb.kit.edu/web/Lehre/Praktikum_Knowledge_Discovery_and_Data_Science)

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)

2513311, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**

#### 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](mailto:sem-ep@fzi.de).

#### Organizational issues

Questions are answered via the e-mail address [sem-ep@fzi.de](mailto:sem-ep@fzi.de).

**Cognitive Automobiles and Robots**2513500, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)  
On-Site****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)**2513553, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)  
On-Site****Content**

What should a voting procedure fulfill? When is a voting procedure secure? Which components need to be examined? Which methods can be used to investigate this?

Cryptographic voting procedures and algorithmic voting (counting) procedures are examined from different perspectives (cryptographic methods, formal correctness, human factors).

This course can also be credited for the KASTEL certificate. Further information about obtaining the certificate can be found on the SECUSO website ([https://secuso.aifb.kit.edu/Studium\\_und\\_Lehre.php](https://secuso.aifb.kit.edu/Studium_und_Lehre.php)).

**Organizational issues**

Die Anmeldung für das Seminar ist bis zum 17.04. über <https://portal.wiwi.kit.edu/ys/8037> möglich.

**Security and Privacy Awareness**2400125, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)  
Blended (On-Site/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.

**Important notes:**

- Consider that legal-focused topics require you to speak and understand German legal texts
- The seminar is only for MASTER students (or Mastervorzug)
- The link to enrol is for every student, regardless of the study background

**Dates (not final):**

- Kick-Off: Tue, 22.10.2024, 11:30 Uhr, Raum 1C-03, Gebäude 5.20
- First version: 05.01.2025
- Final version: 23.02.2025
- Presentation: CW 12

**Topics:**

The advertised topics can be found in the wiwi portal [<https://portal.wiwi.kit.edu/ys/8308>]. They will be assigned after the kick-off.

**Seminar Advanced Analytics for Road Traffic Noise (Master)**2513105, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)**Seminar (S)  
On-Site****Content**

Road traffic noise (RTN) stands as a significant environmental pollutant encountered in daily life, profoundly impacting human health. Extensive research has empirically validated its detrimental effects on well-being, encompassing cardiovascular and mental health implications (Stansfeld et al., 2021; Lan et al., 2020). Moreover, regulatory bodies have proposed guidelines and regulations (WHO, 2018; EU, 2019) to mitigate environmental noise exposure, prompting stakeholders like vehicle manufacturers to integrate measures addressing road traffic noise into their design frameworks.

In this seminar, we diverge from the regulatory perspective on RTN and instead delve into its comprehension through data analytics and other techniques. Specifically, we present a guideline for understanding this societal concern and discuss existing road traffic noise modeling (RTNM) approaches, in particular, their formulation and considerations.

**Topics:**

1. Introduction to RTN
2. Overview on RTNM
3. Time series analysis
4. Data exploration and visualization
5. Machine learning for RTNM
6. Sound feature extraction and analysis

**Literature**

- Stansfeld, S., Clark, C., Smuk, M., Gallacher, J., & Babisch, W. (2021). Road traffic noise, noise sensitivity, noise annoyance, psychological and physical health and mortality. *Environmental Health*, 20, 1-15.
- Lan, Y., Roberts, H., Kwan, M. P., & Helbich, M. (2020). Transportation noise exposure and anxiety: A systematic review and meta-analysis. *Environmental research*, 191, 110118.
- WHO. (2018) Environmental Noise Guidelines for the European Region.
- EU. (2019) Regulation (EU) No 540/2014 of the European Parliament and of the Council of 16 April 2014 on the Sound Level of Motor Vehicles and of Replacement Silencing Systems, and Amending Directive 2007/46/EC and Repealing Directive 70/157/EEC.

**Seminar Linked Data and the Semantic Web (Master)**2513313, WS 24/25, 3 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)  
On-Site****Content**

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

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

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

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

Topics of interest include, but are not limited to:

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

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

**Seminar Real-World Challenges in Data Science and Analytics (Bachelor)**2513314, WS 24/25, 3 SWS, Language: German/English, [Open in study portal](#)**On-Site**



**Content**

In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

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

**Seminar Real-World Challenges in Data Science and Analytics (Master)**

2513315, WS 24/25, 3 SWS, Language: German/English, [Open in study portal](#)

**On-Site****Content**

In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

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

**Seminar Cognitive Automobiles and Robots (Master)**

2513500, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)  
Blended (On-Site/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 Knowledge Graphs and Large Language Models (Master)**

2513607, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**



**Content**

Large language models (LLMs) such as GPT-3 have shown remarkable capabilities in transforming various natural language processing (NLP) tasks across different domains. However, LLMs often generate incorrect answers, known as hallucinations, posing significant challenges to their usability and reliability. Additionally, LLMs operate as black boxes, making it difficult to understand how they arrive at specific conclusions, leading to transparency and explainability issues. Combining LLMs with KGs creates a powerful synergy that significantly enhances the capabilities of artificial intelligence across various tasks. This integration leverages the strengths of both technologies, with LLMs excelling at understanding and generating human-like text, and KGs providing structured, reliable information about entities and their relationships. Together, they offer a robust approach to problem-solving across diverse domains.

This seminar will focus on the intersection of LLMs and KGs, covering areas of interest including, but not limited to:

- KG completion using LLMs
- Question answering with KGs and LLMs
- Explainability of LLMs with KG integration
- Reasoning with LLMs and KGs
- Enhanced prompt engineering using KGs

**Contributions of the students:**

Each student will be assigned one paper on the topic, which could be a research paper discussing a novel approach or a resource paper presenting datasets, tools, etc. The student will be responsible for the following tasks:

1. **Report Writing:** Read the assigned paper thoroughly and write a 15-page seminar report explaining the methods and findings in their own words.
2. **Presenting:** Prepare and deliver a seminar presentation to share insights from the paper with other seminar participants.
3. **Conducting Experiments:** If the authors provide code, re-implement it for small-scale experiments using Google Colab or make the implementation available via GitHub.

T











## 7.207 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-106425 - Seminar Module](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2024	2500028	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar / 	Nickel, Mitarbeiter, Pomes
ST 2024	2550131	Seminar on Methodical Foundations of Operations Research (B)	2 SWS	Seminar / 	Stein, Beck, Schwarze
ST 2024	2550132	Seminar on Mathematical Optimization (MA)	2 SWS	Seminar / 	Stein, Beck, Schwarze
ST 2024	2550462	Seminar: Trending Topics in Machine Learning and Optimization (Master)	2 SWS	Seminar / 	Rebennack, Warwicker
ST 2024	2550473	Seminar: Energy and Power Systems Optimization (Master)	2 SWS	Seminar / 	Rebennack, Warwicker
WT 24/25	2550131	Seminar on Methodical Foundations of Operations Research (B)	2 SWS	Seminar / 	Stein, Beck, Schwarze
WT 24/25	2550132	Seminar zur Mathematischen Optimierung (MA)	2 SWS	Seminar / 	Stein, Beck, Schwarze
WT 24/25	2550462	Seminar on Trending Topics in Optimization and Machine Learning (Master)	2 SWS	Seminar / 	Rebennack, Warwicker
WT 24/25	2550473	Seminar on Energy and Power Systems Optimization (Master)	2 SWS	Seminar / 	Rebennack, Warwicker
WT 24/25	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar / 	Nickel, Mitarbeiter
Exams					
ST 2024	7900026	Seminar Modern OR and Innovative Logistics			Nickel
ST 2024	7900200_SS2024	Seminar in Operations Research A (Master)			Stein
ST 2024	7900201_SS2024	Seminar in Operations Research (Bachelor)			Stein
ST 2024	7900295	Seminar Trending Topics in Machine Learning and Opt. - Operations Research A (Master)			Rebennack
ST 2024	7900317	Digitalization in the Steel Industry			Nickel
ST 2024	7900349	Seminar on Power Systems Optimization (Master)			Rebennack
WT 24/25	7900342	Seminar Modern OR and Innovative Logistics			Nickel

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

### Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

### Prerequisites

None.

**Recommendation**

See seminar description in the course catalogue of the KIT (<https://campus.kit.edu/>)

**Annotation**

The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: <https://portal.wiwi.kit.edu>.

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

**Seminar: Modern OR and Innovative Logistics**

2500028, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)  
Blended (On-Site/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**

Anmeldung erfolgt über das Wiwi-Portal. Nähere Informationen hierzu finden Sie hier zu einem späteren Zeitpunkt.

**Literature**

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

**Seminar on Methodical Foundations of Operations Research (B)**

2550131, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)  
On-Site**

**Content**

The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor student are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientific reasoning. Also rethoric abilities may be improved.

**Remarks:**

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

**Assessment:**

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation. The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

**Workload:**

The total workload for this course is approximately 90 hours. For further information see German version.

**Literature**

Die Literatur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a preparatory meeting.

**Seminar on Methodical Foundations of Operations Research (B)**

2550131, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)  
On-Site**

**Content**

The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor students are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientific reasoning. Also rethoric abilities may be improved.

**Remarks:**

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

**Assessment:**

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation. The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

**Workload:**

The total workload for this course is approximately 90 hours. For further information see German version.

**Literature**

Die Literatur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a preparatory meeting.

**Seminar: Modern OR and Innovative Logistics**

2550491, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)**  
**Blended (On-Site/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**

**Anmeldezeitraum:** 11.09.24 bis 30.09.24 im Wiwi Portal

**Literature**

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

## T

## 7.208 Course: Seminar in Operations Research B (Master) [T-WIWI-103482]

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

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

**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2024	2500028	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar / 🔄	Nickel, Mitarbeiter, Pomes
ST 2024	2550131	Seminar on Methodical Foundations of Operations Research (B)	2 SWS	Seminar / 🎧	Stein, Beck, Schwarze
ST 2024	2550132	Seminar on Mathematical Optimization (MA)	2 SWS	Seminar / 🎧	Stein, Beck, Schwarze
ST 2024	2550462	Seminar: Trending Topics in Machine Learning and Optimization (Master)	2 SWS	Seminar / 🔄	Rebennack, Warwicker
ST 2024	2550473	Seminar: Energy and Power Systems Optimization (Master)	2 SWS	Seminar / 🔄	Rebennack, Warwicker
WT 24/25	2550131	Seminar on Methodical Foundations of Operations Research (B)	2 SWS	Seminar / 🎧	Stein, Beck, Schwarze
WT 24/25	2550132	Seminar zur Mathematischen Optimierung (MA)	2 SWS	Seminar / 🎧	Stein, Beck, Schwarze
WT 24/25	2550462	Seminar on Trending Topics in Optimization and Machine Learning (Master)	2 SWS	Seminar / 🔄	Rebennack, Warwicker
WT 24/25	2550473	Seminar on Energy and Power Systems Optimization (Master)	2 SWS	Seminar / 🔄	Rebennack, Warwicker
WT 24/25	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar / 🔄	Nickel, Mitarbeiter
Exams					
ST 2024	7900026	Seminar Modern OR and Innovative Logistics			Nickel
ST 2024	7900200_SS2024	Seminar in Operations Research A (Master)			Stein
ST 2024	7900201_SS2024	Seminar in Operations Research (Bachelor)			Stein
ST 2024	7900296	Seminar in Operations Research B (Master)			Rebennack
ST 2024	7900317	Digitalization in the Steel Industry			Nickel
WT 24/25	7900342	Seminar Modern OR and Innovative Logistics			Nickel

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

### Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

### Prerequisites

None.

### Recommendation

See seminar description in the course catalogue of the KIT (<https://campus.kit.edu/>)

**Annotation**

The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: <https://portal.wiwi.kit.edu>.

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

**Seminar: Modern OR and Innovative Logistics**

2500028, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)**  
**Blended (On-Site/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**

Anmeldung erfolgt über das Wiwi-Portal. Nähere Informationen hierzu finden Sie hier zu einem späteren Zeitpunkt.

**Literature**

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

**Seminar on Methodical Foundations of Operations Research (B)**

2550131, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

**Content**

The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor student are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientific reasoning. Also rethoric abilities may be improved.

**Remarks:**

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

**Assessment:**

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation. The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

**Workload:**

The total workload for this course is approximately 90 hours. For further information see German version.

**Literature**

Die Literatur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a preparatory meeting.

**Seminar on Methodical Foundations of Operations Research (B)**

2550131, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

**Content**

The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor students are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientific reasoning. Also rethoric abilities may be improved.

**Remarks:**

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

**Assessment:**

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation. The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

**Workload:**

The total workload for this course is approximately 90 hours. For further information see German version.

**Literature**

Die Literatur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a preparatory meeting.

**Seminar: Modern OR and Innovative Logistics**

2550491, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)  
Blended (On-Site/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**

**Anmeldezeitraum:** 11.09.24 bis 30.09.24 im Wiwi Portal

**Literature**

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

## T





## 7.209 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-106425 - Seminar Module](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2024	2500004	<a href="#">Predictive Data Analytics - An Introduction to Statistical Machine Learning</a>	2 SWS	Seminar / 	Schienle, Lerch
ST 2024	2521310	<a href="#">Advanced Topics in Econometrics</a>	2 SWS	Seminar	Schienle, Krüger, Buse, Rüter, Bracher
ST 2024	2550561	<a href="#">Fortgeschrittene Themen zu Statistik, Datenanalyse und maschinellem Lernen (Master)</a>	2 SWS	Seminar / 	Grothe, Kaplan, Liu
WT 24/25	25000111	<a href="#">Statistics and Epidemics</a>		Seminar / 	Bracher
WT 24/25	2500012		2 SWS	Seminar / 	Grothe, Kaplan, Liu
WT 24/25	2500047	<a href="#">Advanced Topics in Econometrics, Statistics and Data Science</a>	2 SWS	Seminar	Schienle, Krüger, Buse, Rüter, Bracher
WT 24/25	2521310	<a href="#">Topics in Econometrics</a>	2 SWS	Seminar	Schienle, Krüger, Rüter
Exams					
ST 2024	7900004	<a href="#">Predictive Data Analytics - An Introduction to Statistical Machine Learning</a>			Lerch
ST 2024	7900150	<a href="#">Advanced Topics in Econometrics, Seminar in Statistics A (Master)</a>			Schienle, Krüger
ST 2024	7900343	<a href="#">Seminar in Statistics A (Master)</a>			Grothe
WT 24/25	7900090	<a href="#">Advanced Topics in Econometrics, Statistics and Data Science</a>			Schienle
WT 24/25	7900144	<a href="#">Topics in Econometrics</a>			Schienle

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:*



**Predictive Data Analytics - An Introduction to Statistical Machine Learning**2500004, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)  
On-Site****Organizational issues**

Blockveranstaltung, Termine werden bekannt gegeben

**Advanced Topics in Econometrics**2521310, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)****Organizational issues**

Blockveranstaltung, Termine werden bekannt gegeben

**Statistics and Epidemics**25000111, WS 24/25, SWS, Language: English, [Open in study portal](#)**Seminar (S)  
On-Site****Content****Motivation**

Infectious disease epidemiology gives rise to a large variety of real-time data streams. During the COVID-19 pandemic, the interpretation and statistical analysis of these data has proven crucial, but also highly challenging. In this seminar, students will get to know central concepts of infectious disease surveillance and modelling from a statistical perspective. Following an overview of various aspects in the form of blocked lectures, students will choose a more specific topic for their seminar thesis.

**Learning Goals**

Students develop an understanding of central modeling tasks and methods, including

- estimation of reproductive numbers
- compartment models of disease spread
- nowcasting and short-term forecasting of disease spread
- detection of outbreaks
- diagnostic testing

Moreover, they get to know various data types commonly used in the analysis of disease spread.

**Logistics**

The project seminar is worth 4.5 credit points (Leistungspunkte). There will be three blocked lectures (approx. 135 minutes each) in the beginning of the lecture period. For the various topics covered, subjects for seminar theses will be proposed (and students are allowed to propose their own topics). Towards the end of the semester, students present their progress on the chosen topics to the group. Grades will be based on this presentation (25%) and the final report (75%).

**Organizational issues****Prerequisites**

Students should have a very good working knowledge of statistics, including proficiency in a programming language for applied data analysis. The lecture VWL3 Introduction to Econometrics is a prerequisite for the project seminar. Most available software in the field is in R, but in principle Python can be used as well. Advanced knowledge of biology, medicine or epidemiology is not required.

**Application Procedure**

Please submit a transcript of records as well as a short letter of motivation (roughly 200 words) via WIWI-Portal: <https://portal.wiwi.kit.edu/ys/8223>

Application time frame: July 20th, 2024 to September, 30th, 2024.

**Advanced Topics in Econometrics, Statistics and Data Science**2500047, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)****Organizational issues**

Blockveranstaltung, Termine werden bekannt gegeben

**Topics in Econometrics**2521310, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)**Seminar (S)****Organizational issues**

Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

**7.210 Course: Seminar in Statistics B (Master) [T-WIWI-103484]**

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

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

**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2024	2500004	<a href="#">Predictive Data Analytics - An Introduction to Statistical Machine Learning</a>	2 SWS	Seminar /	Schienle, Lerch
ST 2024	2521310	<a href="#">Advanced Topics in Econometrics</a>	2 SWS	Seminar	Schienle, Krüger, Buse, Rüter, Bracher
ST 2024	2550561	<a href="#">Fortgeschrittene Themen zu Statistik, Datenanalyse und maschinellem Lernen (Master)</a>	2 SWS	Seminar /	Grothe, Kaplan, Liu
WT 24/25	25000111	<a href="#">Statistics and Epidemics</a>		Seminar /	Bracher
WT 24/25	2500012		2 SWS	Seminar /	Grothe, Kaplan, Liu
WT 24/25	2500047	<a href="#">Advanced Topics in Econometrics, Statistics and Data Science</a>	2 SWS	Seminar	Schienle, Krüger, Buse, Rüter, Bracher
WT 24/25	2521310	<a href="#">Topics in Econometrics</a>	2 SWS	Seminar	Schienle, Krüger, Rüter
Exams					
ST 2024	7900004	<a href="#">Predictive Data Analytics - An Introduction to Statistical Machine Learning</a>			Lerch
ST 2024	7900341	<a href="#">Seminar in Statistics B (Master)</a>			Grothe
WT 24/25	7900089	<a href="#">Seminar in Statistics B (Master)</a>			Schienle
WT 24/25	7900090	<a href="#">Advanced Topics in Econometrics, Statistics and Data Science</a>			Schienle

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:*

**Predictive Data Analytics - An Introduction to Statistical Machine Learning**2500004, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)  
On-Site****Organizational issues**

Blockveranstaltung, Termine werden bekannt gegeben

**Advanced Topics in Econometrics**2521310, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)****Organizational issues**

Blockveranstaltung, Termine werden bekannt gegeben

**Statistics and Epidemics**25000111, WS 24/25, SWS, Language: English, [Open in study portal](#)**Seminar (S)  
On-Site****Content****Motivation**

Infectious disease epidemiology gives rise to a large variety of real-time data streams. During the COVID-19 pandemic, the interpretation and statistical analysis of these data has proven crucial, but also highly challenging. In this seminar, students will get to know central concepts of infectious disease surveillance and modelling from a statistical perspective. Following an overview of various aspects in the form of blocked lectures, students will choose a more specific topic for their seminar thesis.

**Learning Goals**

Students develop an understanding of central modeling tasks and methods, including

- estimation of reproductive numbers
- compartment models of disease spread
- nowcasting and short-term forecasting of disease spread
- detection of outbreaks
- diagnostic testing

Moreover, they get to know various data types commonly used in the analysis of disease spread.

**Logistics**

The project seminar is worth 4.5 credit points (Leistungspunkte). There will be three blocked lectures (approx. 135 minutes each) in the beginning of the lecture period. For the various topics covered, subjects for seminar theses will be proposed (and students are allowed to propose their own topics). Towards the end of the semester, students present their progress on the chosen topics to the group. Grades will be based on this presentation (25%) and the final report (75%).

**Organizational issues****Prerequisites**

Students should have a very good working knowledge of statistics, including proficiency in a programming language for applied data analysis. The lecture VWL3 Introduction to Econometrics is a prerequisite for the project seminar. Most available software in the field is in R, but in principle Python can be used as well. Advanced knowledge of biology, medicine or epidemiology is not required.

**Application Procedure**

Please submit a transcript of records as well as a short letter of motivation (roughly 200 words) via WIWI-Portal: <https://portal.wiwi.kit.edu/ys/8223>

Application time frame: July 20th, 2024 to September, 30th, 2024.

**Advanced Topics in Econometrics, Statistics and Data Science**2500047, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)****Organizational issues**

Blockveranstaltung, Termine werden bekannt gegeben

**Topics in Econometrics**2521310, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)**Seminar (S)****Organizational issues**

Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

T


**7.211 Course: Seminar Production Technology [T-MACH-109062]**





**Responsible:** Prof. Dr.-Ing. Jürgen Fleischer  
Prof. Dr.-Ing. Gisela Lanza  
Prof. Dr.-Ing. Volker Schulze

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2024	2149665	<a href="#">Seminar Production Technology</a>	1 SWS	Seminar / 	Fleischer, Lanza, Schulze, Zanger
Exams					
ST 2024	76-T-MACH-109062	<a href="#">Seminar Production Technology</a>			Fleischer, Lanza, Schulze, Zanger
WT 24/25	76-T-MACH-109062	<a href="#">Seminar Production Technology</a>			Fleischer, Lanza, Schulze

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

**Competence Certificate**

Alternative test achievement (graded):

- written elaboration (workload of at least 80 h)
- oral presentation (approx. 30 min)

**Prerequisites**

none

**Annotation**

The specific topics are published on the homepage of the wbk Institute of Production Science.

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

V

**Seminar Production Technology**

2149665, SS 2024, 1 SWS, Language: German, [Open in study portal](#)

**Seminar (S)**  
**Blended (On-Site/Online)**

**Content**

In course of the seminar Production Technology current issues of the wbk main fields of research "Manufacturing and Materials Technology", "Machines, Equipment and Process Automation" as well as "Production Systems" are discussed.

The specific topics are published on the homepage of the wbk Institute of Production Science.

**Learning Outcomes:**

The students ...

- are in a position to independently handle current, research-based tasks according to scientific criteria.
- are able to research, analyze, abstract and critically review the information.
- can draw own conclusions using their interdisciplinary knowledge from the less structured information and selectively develop current research results.
- can logically and systematically present the obtained 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.

**Workload:**

regular attendance: 10 hours

self-study: 80 hours

**Organizational issues**


siehe <http://www.wbk.kit.edu/seminare.php>





T

**7.212 Course: Seminar: Commercial and Corporate Law in the IT Industry [T-INFO-111405]**

**Responsible:** Dr. Georg Nolte  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101216 - Private Business Law](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each winter term	1

Events					
WT 24/25	2400165	<a href="#">Seminar Commercial and Corporate Law in Information Technology</a>	2 SWS	Seminar / 	Nolte
Exams					
WT 24/25	7500182	<a href="#">Seminar: Legal Studies II</a>			Boehm, Raabe, Sattler
WT 24/25	7500310	<a href="#">Seminar: Commercial and Corporate Law in the IT Industry</a>			Sattler

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








T

## 7.213 Course: Seminar: IT- Security Law [T-INFO-111404]

**Responsible:** Martin Schallbruch  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-106754 - Public Economic and Technology Law](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each winter term	1

Events					
WT 24/25	24389	<a href="#">Seminar "IT security law"</a>	2 SWS	Seminar / 	Schallbruch
Exams					
WT 24/25	7500249	<a href="#">Seminar: IT- Security Law</a>			Zufall

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

T

## 7.214 Course: Seminar: Legal Studies I [T-INFO-101997]

**Responsible:** N.N.  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2024	2400005	<a href="#">Governance, Risk &amp; Compliance</a>	2 SWS	Seminar /	Herzig, Siddiq
ST 2024	2400022	<a href="#">EU Digital Regulatory Framework</a>	2 SWS	Seminar /	Zufall
ST 2024	2400078	<a href="#">Intelligente Chatbots und Recht</a>	2 SWS	Seminar /	Raabe
ST 2024	2400170	<a href="#">Human and Fundamental Rights in the Digital Era: Current Challenges</a>	2 SWS	Seminar /	Friedl
ST 2024	2400171	<a href="#">Regulating AI: from ethics to law</a>	2 SWS	Seminar /	Gil Gasiola
ST 2024	2400194	<a href="#">(Generative) KI und Recht</a>	2 SWS	Seminar /	Boehm, Vettermann
ST 2024	2400204	<a href="#">„Vom Original zur Kopie und vom Analogen zum Digitalen“</a>	2 SWS	Seminar /	Dreier, Jehle
ST 2024	2400207	<a href="#">Rechtlicher Rahmen für die Europäische Datenökonomie</a>	2 SWS	Seminar /	Sattler
ST 2024	2400208	<a href="#">Rechtlicher Rahmen für Künstliche Intelligenz</a>	2 SWS	Seminar /	Sattler
ST 2024	24820	<a href="#">Current Issues in Patent Law</a>	2 SWS	Seminar /	Melullis
WT 24/25	2400060	<a href="#">Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection</a>	2 SWS	Seminar /	Reussner, Raabe, Werner, Müller-Quade
WT 24/25	2400184	<a href="#">EU Digital Regulatory Framework</a>	2 SWS	Seminar /	Zufall
WT 24/25	2400209	<a href="#">Rechtliche Herausforderungen für die Europäische Datenökonomie</a>	2 SWS	Seminar /	Sattler
WT 24/25	2400216	<a href="#">(Generative) KI und Recht</a>	2 SWS	Seminar /	Boehm, Vettermann
WT 24/25	2513214	<a href="#">Seminar Information security and Data protection (Bachelor)</a>	2 SWS	Seminar /	Volkamer, Raabe, Schiefer, Hennig, Sterz, Werner, Ullrich
Exams					
ST 2024	7500140	Seminar: Legal Studies I			Raabe, Melullis, Boehm, Dreier
ST 2024	7500159	Seminar: Legal Studies I			Zufall
WT 24/25	7500035	Seminar: Legal Studies II			Zufall
WT 24/25	7500182	Seminar: Legal Studies II			Boehm, Raabe, Sattler
WT 24/25	7500232	Seminar Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection			Reussner
WT 24/25	7500249	Seminar: IT- Security Law			Zufall

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

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

V

## EU Digital Regulatory Framework

2400022, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)  
On-Site

**Content****Note:**

This class is mainly intended for Bachelor and Master students in Business Informatics and those with Law as a minor subject, but also open interested students from other disciplines.

This class aims to provide an overview on the legal instruments forming the EU digital regulatory framework. Following its Digital Single Market Strategy, the EU has set up a new strategic programme for a "Digital Decade". Existing regulations like the General Data Protection Regulation (GDPR), or the E-Commerce Directive, are being complemented by a variety of new instruments that aim to set binding rules on online markets, to regulate data flows in various ways, but also to pioneer a legal framework on AI. Prominent instruments include the new AI Act (proposal), the Digital Services Act (DSA) and Digital Markets Act (DMA), the Data Act, Data Governance Act, or Open Data Directive.

The class will provide an overview on the existing framework: Which regulations and directives are relevant? How do they apply and interact with each other in a broader context?

Another objective is to provide students with the ability to read these legal instruments: How to access regulatory instruments that often have more than 100 pages (without having to read every single sentence)? How to gain a comprehensive, high-level understanding of the instrument? How to identify parts relevant to a particular legal problem?

The class will start with an introduction into EU law and regulatory instruments in general. Concrete guidance on reading, analysing and working with legal instruments in English will be given. Based on these instructions, students will be assigned legal instruments to present in the final unit along with a two-pages report.

Grades will be assigned based on the quality of these presentations and the report, as well as participation in the discussion (presentation: 40 %, two-pages report: 40 %, discussion: 20 %).

**Organizational issues**

**Anmeldungen für das Seminar bitte NUR! über das WiWi-Portal!**

**\*Für die Prüfung bitte NUR über CAS (Campus-Portal) anmelden!**

\*Erläuterung: nach der für die Teilnahme am Seminar verbindlichen Teilnahme an der Einführungsveranstaltung bitte Anmeldung über das Campus-System (notwendig für die Erfassung der Note der Seminararbeit).

Termine im SoSe 2024:

Mittwoch, den 8. Mai 2024, 16-19h (Kick-off)

Dienstag, den 23. Juli 2024, 12-18h (Presentations).

Raum:

jeweils im Seminarraum Nr. 313, Geb. 07.08.

**English:**

Please register for the seminar ONLY via the WiWi-Portal!

\*Please register for the exam ONLY via CAS (Campus-Portal)!

\*Explanation: after attending the introductory event, which is mandatory for participation in the seminar, please register via Campus System (necessary for recording the grade of the seminar papers).

Dates in summer term 2024:

Wednesday, 8 May 2024, 16-19h (kick-off)

Tuesday, 23 July 2024, 12-18h (presentations).

Room:

In seminar room no. 313, building 07.08.

**Human and Fundamental Rights in the Digital Era: Current Challenges**

2400170, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**

### Content

The seminar introduces students to the various fundamental and human rights documents relevant to Germany. It teaches students their basic content and familiarizes them with classic patterns of argumentation regarding the interpretation and application of fundamental rights. The seminar provides an overview of the relevance of human and fundamental rights for the development and use of new (digital) technologies. Students will be enabled to reflect on the human rights-implications of new technologies and to conceive own legal answers. One thematic focus will be on the (human rights) analysis and evaluation of new AI technologies. Fundamental and human rights issues in this area, which will be presented to the students or which they will explore themselves, include: Are AI developers allowed to use personal data from the internet for the development of AI systems and, if so, under what conditions? How do concepts of discrimination differ between computer scientists and lawyers? How should the authorizations of real-time biometric surveillance covered by the European AI Act be assessed in terms of fundamental rights? Do human rights protect artists from the unauthorized exploitation of their works for new "generative AI" systems? Students will also be free to explore other intersections between human rights and technology, such as new questions in data protection law, the use of new technologies by police, law enforcement and migration agencies or the fundamental rights obligations of large social media platforms such as Facebook or Twitter. The seminar's contents will partly be taught in a one-day seminar and will partly be explored by the students themselves in supervised term papers.

### Organizational issues

**Anmeldungen für das Pro-Seminar bitte NUR! über das WiWi-Portal!**

**Nachder für die Teilnahme am Seminar verbindlichen Teilnahme an der Einführungsveranstaltung bitte Anmeldung über das Campus-System (notwendig für die Erfassung der Note der Seminararbeit).**

**Blockseminar im SoSe 2024 (2 Termine):**

1. Termin:

Freitag, 26. April 2024, 09:00 - 17:30 Uhr.

Ort: [20.30 Seminarraum -1.008 \(UG\)](#)

und

Freitag, 19. Juli 2024

jeweils von 09:00 - 17:30 Uhr (Stand per 3.1.2024)

Raum:

Geb. 50.28, Seminarraum 1 (Nebengebäude vom InformatiKOM)

<https://www.kit.edu/campusplan/>

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English:

(Please register for the seminar ONLY via the WiWi-Portal!

After attending the introductory event, which is mandatory for participation in the seminar, please register via the campus system (necessary for recording the grade of the seminar paper).

Block seminar in summer term 2024 (2 dates):

Friday, 26 April 2024

and

Friday, 19 July 2024

probably from 09:00 - 17:30 in each case (as of 3 January 2024)

Room:

Building 50.28, seminar room 1 (outbuilding of InformatiKOM)

<https://www.kit.edu/campusplan/>



### Regulating AI: from ethics to law

2400171, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**

**Content****Credit points = ECTS**

3 ECTS

**Language:**

English

**Competency Goals:**

Students comprehend the role of technology regulation.

They are able to identify different types of regulation and their impact on different stakeholders.

They know the main aspects of the regulation of AI systems.

They understand the foundations of the AI Act of the EU.

They know the content of AI principles and are able to assess their implementation in specific projects.

**Content:**

This seminar will provide an overview of the regulation of technologies and in particular the regulation of AI systems. After an introduction to forms of regulation, students will explore the different regulatory instruments from the perspective of the consolidated principles of AI: fairness, transparency, privacy, security and accountability. This will allow students to discuss how the principles and rules governing AI can be implemented in concrete cases. The seminar will cover the following topics:

- Introduction to technology regulation
- Objectives of regulation
- Types of regulation
- Challenges in regulating new / disruptive technologies
- Specific challenges in regulating AI
- Fragmented/vertical regulation of AI
- AI Act
- AI principles: fairness, transparency, privacy, security, and accountability
- The role of principles in regulating AI
  - Dealing with principles when developing and implementing AI systems

**Competency certificate:**

The assessment of this course is carried out by the following aspects, which will be considered in the grading (§ 4 Abs. 2 Nr. 3 SPO): term paper (approx. 5 pages), presentation (approx. 20 min.) and discussion.

The grading scale will be announced in the course. Students may redraw from the examination during the first two weeks after the topic has been communicated.

**Organizational issues**

**Anmeldungen für das Seminar bitte NUR! über das WiWi-Portal!**

**\*Für die Prüfung bitte NUR über CAS (Campus-Portal) anmelden!**

\*Erläuterung

Nach der für die Teilnahme am Seminar verbindlichen Teilnahme an der Einführungsveranstaltung bitte Anmeldung über das Campus-System (notwendig für die Erfassung der Note der Seminararbeit).

**Blockseminar im SoSe 2024 (2 Termine):**

Termine und Uhrzeit:

Mi, 17.04.2024, 14:00-17:00;

Mi, 17.07.2024, 12:00-18:00.

Raum: jeweils im Seminarraum Nr. 313 (Geb. 07.08)

**English:**

Please register for the seminar ONLY via the WiWi-Portal!

\*Please register for the exam ONLY via CAS (Campus-Portal)!

\*Explanation

After attending the introductory event, which is mandatory for participation in the seminar, please register via the campus system (necessary for recording the grade of the seminar paper).

**Block seminar in summer term 2024 (2 dates):**

Dates and time:

Wed, 17/04/2024, 14:00-17:00;

Wed, 17/07/2024, 12:00-18:00.

Room: each time in seminar room no. 313 (building 07.08)

**EU Digital Regulatory Framework**

2400184, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**

**Content**

This class aims to provide an overview on the legal instruments forming the EU digital regulatory framework. Following its Digital Single Market Strategy, the EU has set up a new strategic programme for a "Digital Decade". Existing regulations like the General Data Protection Regulation (GDPR), or the E-Commerce Directive, are being complemented by a variety of new instruments that aim to set binding rules on online markets, to regulate data flows in various ways, but also to pioneer a legal framework on AI. Prominent instruments include the new AI Act (proposal), the Digital Services Act (DSA) and Digital Markets Act (DMA), the Data Act, Data Governance Act, or Open Data Directive.

The class will provide an overview on the existing framework: Which regulations and directives are relevant? How do they apply and interact with each other in a broader context?

Another objective is to provide students with the ability to read these legal instruments: How to access regulatory instruments that often have more than 100 pages (without having to read every single sentence)? How to gain a comprehensive, high-level understanding of the instrument? How to identify parts relevant to a particular legal problem?

The class will start with an introduction into EU law and regulatory instruments in general. Concrete guidance on reading, analysing and working with legal instruments in English will be given. Based on these instructions, students will be assigned legal instruments to present in the final unit along with a two-pages report.

Grades will be assigned based on the quality of these presentations and the report, as well as participation in the discussion (presentation: 40 %, two-pages report: 40 %, discussion: 20 %).

**Organizational issues****WS 2024/25**

**Hierbei handelt es sich NICHT um eine Pro-Seminar, sondern um ein Seminar.**

**Anmeldungen für das Seminar bitte NUR! über das WiWi-Portal!**

**\*Für die Prüfung bitte NUR über CAS (Campus-Portal) anmelden!**

\*Erläuterung: nach der für die Teilnahme am Seminar verbindlichen Teilnahme an der Einführungsveranstaltung bitte Anmeldung über das Campus-System (notwendig für die Erfassung der Note der Seminararbeit).

T

## 7.215 Course: Seminar: Legal Studies II [T-INFO-105945]

**Responsible:** N.N.  
**Organisation:** KIT Department of Informatics  
**Part of:** M-WIWI-106425 - Seminar Module

Type	Credits	Grading scale	Version
Examination of another type	3	Grade to a third	1

Events					
ST 2024	2400022	<a href="#">EU Digital Regulatory Framework</a>	2 SWS	Seminar /	Zufall
ST 2024	2400170	<a href="#">Human and Fundamental Rights in the Digital Era: Current Challenges</a>	2 SWS	Seminar /	Friedl
ST 2024	2400171	<a href="#">Regulating AI: from ethics to law</a>	2 SWS	Seminar /	Gil Gasiola
ST 2024	2400194	<a href="#">(Generative) KI und Recht</a>	2 SWS	Seminar /	Boehm, Vettermann
ST 2024	2400204	<a href="#">„Vom Original zur Kopie und vom Analogen zum Digitalen“</a>	2 SWS	Seminar /	Dreier, Jehle
ST 2024	2400207	<a href="#">Rechtlicher Rahmen für die Europäische Datenökonomie</a>	2 SWS	Seminar /	Sattler
ST 2024	2400208	<a href="#">Rechtlicher Rahmen für Künstliche Intelligenz</a>	2 SWS	Seminar /	Sattler
WT 24/25	2400014	<a href="#">Current Issues in Patent Law</a>	2 SWS	Seminar /	Melullis
WT 24/25	2400060	<a href="#">Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection</a>	2 SWS	Seminar /	Reussner, Raabe, Werner, Müller-Quade
WT 24/25	2400125	<a href="#">Security and Privacy Awareness</a>	2 SWS	Seminar /	Seidel-Saul, Volkamer, Boehm, Aldag, Veit
WT 24/25	2400184	<a href="#">EU Digital Regulatory Framework</a>	2 SWS	Seminar /	Zufall
WT 24/25	2400209	<a href="#">Rechtliche Herausforderungen für die Europäische Datenökonomie</a>	2 SWS	Seminar /	Sattler
WT 24/25	2400216	<a href="#">(Generative) KI und Recht</a>	2 SWS	Seminar /	Boehm, Vettermann
WT 24/25	2513214	<a href="#">Seminar Information security and Data protection (Bachelor)</a>	2 SWS	Seminar /	Volkamer, Raabe, Schiefer, Hennig, Sterz, Werner, Ullrich
Exams					
WT 24/25	7500035	<a href="#">Seminar: Legal Studies II</a>			Zufall
WT 24/25	7500182	<a href="#">Seminar: Legal Studies II</a>			Boehm, Raabe, Sattler
WT 24/25	7500232	<a href="#">Seminar Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection</a>			Reussner

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

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

V

## EU Digital Regulatory Framework

2400022, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
On-Site

**Content****Note:**

This class is mainly intended for Bachelor and Master students in Business Informatics and those with Law as a minor subject, but also open interested students from other disciplines.

This class aims to provide an overview on the legal instruments forming the EU digital regulatory framework. Following its Digital Single Market Strategy, the EU has set up a new strategic programme for a "Digital Decade". Existing regulations like the General Data Protection Regulation (GDPR), or the E-Commerce Directive, are being complemented by a variety of new instruments that aim to set binding rules on online markets, to regulate data flows in various ways, but also to pioneer a legal framework on AI. Prominent instruments include the new AI Act (proposal), the Digital Services Act (DSA) and Digital Markets Act (DMA), the Data Act, Data Governance Act, or Open Data Directive.

The class will provide an overview on the existing framework: Which regulations and directives are relevant? How do they apply and interact with each other in a broader context?

Another objective is to provide students with the ability to read these legal instruments: How to access regulatory instruments that often have more than 100 pages (without having to read every single sentence)? How to gain a comprehensive, high-level understanding of the instrument? How to identify parts relevant to a particular legal problem?

The class will start with an introduction into EU law and regulatory instruments in general. Concrete guidance on reading, analysing and working with legal instruments in English will be given. Based on these instructions, students will be assigned legal instruments to present in the final unit along with a two-pages report.

Grades will be assigned based on the quality of these presentations and the report, as well as participation in the discussion (presentation: 40 %, two-pages report: 40 %, discussion: 20 %).

**Organizational issues**

**Anmeldungen für das Seminar bitte NUR! über das WiWi-Portal!**

**\*Für die Prüfung bitte NUR über CAS (Campus-Portal) anmelden!**

\*Erläuterung: nach der für die Teilnahme am Seminar verbindlichen Teilnahme an der Einführungsveranstaltung bitte Anmeldung über das Campus-System (notwendig für die Erfassung der Note der Seminararbeit).

Termine im SoSe 2024:

Mittwoch, den 8. Mai 2024, 16-19h (Kick-off)

Dienstag, den 23. Juli 2024, 12-18h (Presentations).

Raum:

jeweils im Seminarraum Nr. 313, Geb. 07.08.

**English:**

Please register for the seminar ONLY via the WiWi-Portal!

\*Please register for the exam ONLY via CAS (Campus-Portal)!

\*Explanation: after attending the introductory event, which is mandatory for participation in the seminar, please register via Campus System (necessary for recording the grade of the seminar papers).

Dates in summer term 2024:

Wednesday, 8 May 2024, 16-19h (kick-off)

Tuesday, 23 July 2024, 12-18h (presentations).

Room:

In seminar room no. 313, building 07.08.

**Human and Fundamental Rights in the Digital Era: Current Challenges**

2400170, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**



**Content**

The seminar introduces students to the various fundamental and human rights documents relevant to Germany. It teaches students their basic content and familiarizes them with classic patterns of argumentation regarding the interpretation and application of fundamental rights. The seminar provides an overview of the relevance of human and fundamental rights for the development and use of new (digital) technologies. Students will be enabled to reflect on the human rights-implications of new technologies and to conceive own legal answers. One thematic focus will be on the (human rights) analysis and evaluation of new AI technologies. Fundamental and human rights issues in this area, which will be presented to the students or which they will explore themselves, include: Are AI developers allowed to use personal data from the internet for the development of AI systems and, if so, under what conditions? How do concepts of discrimination differ between computer scientists and lawyers? How should the authorizations of real-time biometric surveillance covered by the European AI Act be assessed in terms of fundamental rights? Do human rights protect artists from the unauthorized exploitation of their works for new "generative AI" systems? Students will also be free to explore other intersections between human rights and technology, such as new questions in data protection law, the use of new technologies by police, law enforcement and migration agencies or the fundamental rights obligations of large social media platforms such as Facebook or Twitter. The seminar's contents will partly be taught in a one-day seminar and will partly be explored by the students themselves in supervised term papers.

**Organizational issues**

**Anmeldungen für das Pro-Seminar bitte NUR! über das WiWi-Portal!**

**Nach**der für die Teilnahme am Seminar verbindlichen Teilnahme an der **Einführungsveranstaltung bitte Anmeldung über das Campus-System** (notwendig für die Erfassung der Note der Seminararbeit).

**Blockseminar im SoSe 2024 (2 Termine):**

1. Termin:

Freitag, 26. April 2024, 09:00 - 17:30 Uhr.

Ort: [20.30 Seminarraum -1.008 \(UG\)](#)

und

Freitag, 19. Juli 2024

jeweils von 09:00 - 17:30 Uhr (Stand per 3.1.2024)

Raum:

Geb. 50.28, Seminarraum 1 (Nebengebäude vom InformatiKOM)

<https://www.kit.edu/campusplan/>

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English:

(Please register for the seminar ONLY via the WiWi-Portal!

After attending the introductory event, which is mandatory for participation in the seminar, please register via the campus system (necessary for recording the grade of the seminar paper).

Block seminar in summer term 2024 (2 dates):

Friday, 26 April 2024

and

Friday, 19 July 2024

probably from 09:00 - 17:30 in each case (as of 3 January 2024)

Room:

Building 50.28, seminar room 1 (outbuilding of InformatiKOM)

<https://www.kit.edu/campusplan/>

**Regulating AI: from ethics to law**

2400171, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**

**Content****Credit points = ECTS**

3 ECTS

**Language:**

English

**Competency Goals:**

Students comprehend the role of technology regulation.

They are able to identify different types of regulation and their impact on different stakeholders.

They know the main aspects of the regulation of AI systems.

They understand the foundations of the AI Act of the EU.

They know the content of AI principles and are able to assess their implementation in specific projects.

**Content:**

This seminar will provide an overview of the regulation of technologies and in particular the regulation of AI systems. After an introduction to forms of regulation, students will explore the different regulatory instruments from the perspective of the consolidated principles of AI: fairness, transparency, privacy, security and accountability. This will allow students to discuss how the principles and rules governing AI can be implemented in concrete cases. The seminar will cover the following topics:

- Introduction to technology regulation
- Objectives of regulation
- Types of regulation
- Challenges in regulating new / disruptive technologies
- Specific challenges in regulating AI
- Fragmented/vertical regulation of AI
- AI Act
- AI principles: fairness, transparency, privacy, security, and accountability
- The role of principles in regulating AI
  - Dealing with principles when developing and implementing AI systems

**Competency certificate:**

The assessment of this course is carried out by the following aspects, which will be considered in the grading (§ 4 Abs. 2 Nr. 3 SPO): term paper (approx. 5 pages), presentation (approx. 20 min.) and discussion.

The grading scale will be announced in the course. Students may redraw from the examination during the first two weeks after the topic has been communicated.

**Organizational issues**

**Anmeldungen für das Seminar bitte NUR! über das WiWi-Portal!**

**\*Für die Prüfung bitte NUR über CAS (Campus-Portal) anmelden!**

\*Erläuterung

Nach der für die Teilnahme am Seminar verbindlichen Teilnahme an der Einführungsveranstaltung bitte Anmeldung über das Campus-System (notwendig für die Erfassung der Note der Seminararbeit).

**Blockseminar im SoSe 2024 (2 Termine):**

Termine und Uhrzeit:

Mi, 17.04.2024, 14:00-17:00;

Mi, 17.07.2024, 12:00-18:00.

Raum: jeweils im Seminarraum Nr. 313 (Geb. 07.08)

**English:**

Please register for the seminar ONLY via the WiWi-Portal!

\*Please register for the exam ONLY via CAS (Campus-Portal)!

\*Explanation

After attending the introductory event, which is mandatory for participation in the seminar, please register via the campus system (necessary for recording the grade of the seminar paper).

**Block seminar in summer term 2024 (2 dates):**

Dates and time:

Wed, 17/04/2024, 14:00-17:00;

Wed, 17/07/2024, 12:00-18:00.

Room: each time in seminar room no. 313 (building 07.08)

**Security and Privacy Awareness**

2400125, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**  
**Blended (On-Site/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.

**Important notes:**

- Consider that legal-focused topics require you to speak and understand German legal texts
- The seminar is only for MASTER students (or Mastervorzug)
- The link to enrol is for every student, regardless of the study background

**Dates (not final):**

- Kick-Off: Tue, 22.10.2024, 11:30 Uhr, Raum 1C-03, Gebäude 5.20
- First version: 05.01.2025
- Final version: 23.02.2025
- Presentation: CW 12

**Topics:**

The advertised topics can be found in the wiwi portal [<https://portal.wiwi.kit.edu/ys/8308>]. They will be assigned after the kick-off.

**EU Digital Regulatory Framework**

2400184, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

**Content**

This class aims to provide an overview on the legal instruments forming the EU digital regulatory framework. Following its Digital Single Market Strategy, the EU has set up a new strategic programme for a "Digital Decade". Existing regulations like the General Data Protection Regulation (GDPR), or the E-Commerce Directive, are being complemented by a variety of new instruments that aim to set binding rules on online markets, to regulate data flows in various ways, but also to pioneer a legal framework on AI. Prominent instruments include the new AI Act (proposal), the Digital Services Act (DSA) and Digital Markets Act (DMA), the Data Act, Data Governance Act, or Open Data Directive.

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The class will start with an introduction into EU law and regulatory instruments in general. Concrete guidance on reading, analysing and working with legal instruments in English will be given. Based on these instructions, students will be assigned legal instruments to present in the final unit along with a two-pages report.

Grades will be assigned based on the quality of these presentations and the report, as well as participation in the discussion (presentation: 40 %, two-pages report: 40 %, discussion: 20 %).

**Organizational issues****WS 2024/25**

**Hierbei handelt es sich NICHT um eine Pro-Seminar, sondern um ein Seminar.**

**Anmeldungen für das Seminar bitte NUR! über das WiWi-Portal!**

**\*Für die Prüfung bitte NUR über CAS (Campus-Portal) anmelden!**

\*Erläuterung: nach der für die Teilnahme am Seminar verbindlichen Teilnahme an der Einführungsveranstaltung bitte Anmeldung über das Campus-System (notwendig für die Erfassung der Note der Seminararbeit).

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**7.216 Course: Service Design Thinking [T-WIWI-102849]**





**Responsible:** Prof. Dr. Gerhard Satzger  
Prof. Dr. Orestis Terzidis

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

**Part of:** [M-WIWI-101503 - Service Design Thinking](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	9	Grade to a third	Irregular	5

Events					
ST 2024	2595600	<a href="#">Service Design Thinking</a>	2 SWS	Lecture / 	Feldmann, Terzidis, Satzger
WT 24/25	2595600	<a href="#">Service Design Thinking</a>	2 SWS	Lecture / 	Feldmann, Terzidis, Satzger
Exams					
ST 2024	7900307	<a href="#">Service Design Thinking</a>			Satzger
ST 2024	7900312	<a href="#">Practical Seminar Service Innovation</a>			Satzger

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

**Competence Certificate**

Success is assessed in the form of an alternative exam assessment which consists of a case study, workshops, and a final presentation. The weighting of these components for the grade will be announced at the beginning of the course.

**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 (<https://sdtkarlsruhe.de/>). Furthermore, the lecturers provide an information event for applicants every year in May.

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

V

**Service Design Thinking**

2595600, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

## Content

The Service Design Thinking program is much more than a normal course. Through this program, we provide the knowledge and skills that true innovators need. In this context, we train our participants in the human-centric innovation approach "Design Thinking". In addition, participants work in small international and interdisciplinary teams on real innovation challenges from practice.

The teams are made up of students from KIT and another university from the global SUGAR network. These include, for example, the Hasso Plattner Institute in Potsdam, Trinity College in Dublin and the University of Science and Technology of China. The program includes visits to international events of the SUGAR Network, which are usually held in places known for their high level of innovation. At these events, our participants present their (interim) results to a large audience consisting of employees from the partner companies and the universities involved.

### What students will learn:

- A comprehensive understanding of the globally recognized innovation approach "Design Thinking" as introduced and promoted by the Stanford University
- Development of new, creative solutions through extensive need finding, in particular with regard to the relevant service users
- to develop prototypes of the collected ideas early and independently, to test them and improve them iteratively, thereby solving the issue defined by the partner company
- to communicate, present and network in an interdisciplinary and international environment
- to apply the learned approach in the context of a real innovation project provided by a practical partner.

### Course phases (roughly 4 weeks each):

- **Kick off:**  
Learning the basic method elements by solving an exercise challenge. Participation in the Global Kick-Off of the SUGAR Network consisting of method workshops, working on team challenges, networking with other universities and forming project teams for the challenges of the practical partners.
- **Design Space Exploration:**  
Exploring the problem space by questioning the given innovation challenge from practice. Familiarization with the topic area of the respective challenge. Gathering first impressions of the requirements and needs of people related to the problem.
- **Critical Function Prototype:**  
Building an intensive understanding of the needs of the target group of the respective challenge. Deriving critical functions from the customer's perspective that could help solve the overall problem. Building prototypes for the critical functions and testing them in real customer situations.
- **Dark Horse Prototype:**  
Reversal of assumptions and experiences made so far. The goal is to develop radically new and unconventional ideas. Implementation of the ideas into simple prototypes and subsequent testing.
- **Funky Prototype:**  
Integration of the individual successfully tested functions from the critical function and dark horse phase into solution concepts. These are also tested and further developed.
- **Functional Prototype:**  
Selection of successful funky prototypes and development of these towards high-resolution prototypes. The final solution approach for the project is written down in detail and feedback is obtained.
- **Final Prototype:**  
Implementing the final prototype and presenting it to the practical partner as well as the SUGAR Network.

### Organizational issues

Bei der Vorlesung handelt es sich um eine zweisemestrige Veranstaltung, die jährlich im September startet.

### Literature

- Design Thinking: Das Handbuch; Falk Uebernickel, Walter Brenner, Therese Naef, Britta Pukall, Bernhard Schindlholzer
- The Design Thinking Playbook: Mindful Digital Transformation of Teams, Products, Services, Businesses and Ecosystems; Michael Lewrick, Patrick Link, Larry Leifer
- The Design Thinking Toolbox: A Guide to Mastering the Most Popular and Valuable Innovation Methods; Michael Lewrick, Patrick Link, Larry Leifer
- Frame Innovation: Create New Thinking by Design (Design Thinking, Design Theory); Kees Dorst



## Service Design Thinking

2595600, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
On-Site

## Content

The Service Design Thinking program is much more than a normal course. Through this program, we provide the knowledge and skills that true innovators need. In this context, we train our participants in the human-centric innovation approach "Design Thinking". In addition, participants work in small international and interdisciplinary teams on real innovation challenges from practice.

The teams are made up of students from KIT and another university from the global SUGAR network. These include, for example, the Hasso Plattner Institute in Potsdam, Trinity College in Dublin and the University of Science and Technology of China. The program includes visits to international events of the SUGAR Network, which are usually held in places known for their high level of innovation. At these events, our participants present their (interim) results to a large audience consisting of employees from the partner companies and the universities involved.

### What students will learn:

- A comprehensive understanding of the globally recognized innovation approach "Design Thinking" as introduced and promoted by the Stanford University
- Development of new, creative solutions through extensive need finding, in particular with regard to the relevant service users
- to develop prototypes of the collected ideas early and independently, to test them and improve them iteratively, thereby solving the issue defined by the partner company
- to communicate, present and network in an interdisciplinary and international environment
- to apply the learned approach in the context of a real innovation project provided by a practical partner.

### Course phases (roughly 4 weeks each):

- **Kick off:**  
Learning the basic method elements by solving an exercise challenge. Participation in the Global Kick-Off of the SUGAR Network consisting of method workshops, working on team challenges, networking with other universities and forming project teams for the challenges of the practical partners.
- **Design Space Exploration:**  
Exploring the problem space by questioning the given innovation challenge from practice. Familiarization with the topic area of the respective challenge. Gathering first impressions of the requirements and needs of people related to the problem.
- **Critical Function Prototype:**  
Building an intensive understanding of the needs of the target group of the respective challenge. Deriving critical functions from the customer's perspective that could help solve the overall problem. Building prototypes for the critical functions and testing them in real customer situations.
- **Dark Horse Prototype:**  
Reversal of assumptions and experiences made so far. The goal is to develop radically new and unconventional ideas. Implementation of the ideas into simple prototypes and subsequent testing.
- **Funky Prototype:**  
Integration of the individual successfully tested functions from the critical function and dark horse phase into solution concepts. These are also tested and further developed.
- **Functional Prototype:**  
Selection of successful funky prototypes and development of these towards high-resolution prototypes. The final solution approach for the project is written down in detail and feedback is obtained.
- **Final Prototype:**  
Implementing the final prototype and presenting it to the practical partner as well as the SUGAR Network.

### Organizational issues

Bei der Vorlesung handelt es sich um eine zweisemestrige Veranstaltung, die jährlich im September startet.

### Literature

- Design Thinking: Das Handbuch; Falk Uebernickel, Walter Brenner, Therese Naef, Britta Pukall, Bernhard Schindlholzer
- The Design Thinking Playbook: Mindful Digital Transformation of Teams, Products, Services, Businesses and Ecosystems; Michael Lewrick, Patrick Link, Larry Leifer
- The Design Thinking Toolbox: A Guide to Mastering the Most Popular and Valuable Innovation Methods; Michael Lewrick, Patrick Link, Larry Leifer
- Frame Innovation: Create New Thinking by Design (Design Thinking, Design Theory); Kees Dorst

T

**7.217 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	Grading scale	Recurrence	Version
Examination of another type	3,5	Grade to a third	Each summer term	2

Events					
ST 2024	2581025	<a href="#">Simulation Game in Energy Economics</a>	3 SWS	Lecture / Practice ( / )	Genoese, Zimmermann
Exams					
ST 2024	7981025	<a href="#">Simulation Game in Energy Economics</a>			Fichtner

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

**Competence Certificate**

Examination as written assignment and oral presentation (§4 (2), 1 SPO).

**Prerequisites**

None

**Recommendation**

Visiting the course "Introduction to Energy Economics"

**Annotation**

The number of participants is limited.

There is a registration procedure via CAS followed by a selection of the participants.

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

V

**Simulation Game in Energy Economics**

2581025, SS 2024, 3 SWS, Language: German, [Open in study portal](#)

Lecture / Practice (VÜ)  
On-Site

**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 ad 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


**7.218 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](#)  
[M-WIWI-106410 - Economics & Management](#)

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

Events					
WT 24/25	2581023	<a href="#">(Smart) Energy Infrastructure</a>	4 SWS	Lecture / 	Ardone, Pustisek
Exams					
ST 2024	7900228	<a href="#">Smart Energy Infrastructure NEW</a>			Fichtner
ST 2024	7981023	<a href="#">Smart Energy Infrastructure</a>			Fichtner

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

**Competence Certificate**

The assessment consists of a written exam (60 minutes). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

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

V

**(Smart) Energy Infrastructure**

2581023, WS 24/25, 4 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**Content**

The lecture provides a techno-economic overview of different infrastructures of the energy system and their importance regarding the future energy system ("Energiewende") – in particular

- for electricity:
  - the supply side (e.g. power plants)
  - the demand side (e.g. load structures of appliances, flexibilities) as well as
  - transport infrastructures (electricity grids)
- for fuel transportation:
  - pipeline infrastructures (focus on natural gas)
  - shipping of LNG
  - crude oil and oil product transportation
  - hydrogen transportation
  - comparison of potential energy carriers for global trade of renewable energy (e.g., hydrogen and its derivatives, e-fuels, reactive metals)
- storage systems (e.g. batteries)

Additionally, the lecture provides a toolbox for energy system analysis such as an overview and classification of energy systems modelling approaches as well as the usage of scenario techniques for energy systems analysis.

The lecture also provides practical examples for the relevant methods presented.

**Organizational issues**

Blockveranstaltung am 14.11., 15.11., 28.11., 29.11., 05.12., 06.12., 12.12., 13.12.24

T

**7.219 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	see Annotations	2

Exams			
ST 2024	7900308	<a href="#">Smart Grid Applications</a>	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**

The lecture will no longer be offered from the coming winter semester 2023/24. It is only possible to take part in the main exam (first-time writer) and follow-up exam (repeater).

T

**7.220 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](#)  
[M-WIWI-106408 - Digital Economics](#)

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

Events					
ST 2024	2520537	<a href="#">Social Choice Theory</a>	2 SWS	Lecture / 🗣️	Puppe
ST 2024	2520539	<a href="#">Übung zu Social Choice Theory</a>	1 SWS	Practice / 🗣️	Puppe, Kretz
Exams					
ST 2024	7900039	<a href="#">Social Choice Theory (main date)</a>			Puppe
ST 2024	7900045	<a href="#">Social Choice Theory (make-up date)</a>			Puppe

Legend: 🖥️ Online, 🔄 Blended (On-Site/Online), 🗣️ On-Site, ✖ Canceled

**Competence Certificate**

The assessment consists of a written exam (60 min.). The examination is offered every summer semester.

**Prerequisites**

None

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

V

**Social Choice Theory**

2520537, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**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.

**Workload:**

Total workload for 4.5 credit points: approx. 135 hours

Attendance: 30 hours

Self-study: 105 hours

**Literature**

Main texts:

- Moulin, H. 1988. *Axioms of Cooperative Decision Making*. Cambridge University Press.
- List, C. and Puppe, C. 2009. Judgement Aggregation. A survey. In: *The Handbook of rational & social choice*. P. Anand, P. Pattanaik, C. Puppe (Eds.). Oxford University Press.

Secondary texts:



- Sen, A. K. 1970. *Collective Choice and Social Welfare*. Holden-Day.
- Gaertner, W. 2009. *A Primer in Social Choice Theory*. Revised edition. Oxford University Press.
- Gaertner, W. 2001. *Domain Conditions in Social Choice Theory*. Cambridge University Press.



## T

**7.221 Course: Sociotechnical Information Systems Development [T-WIWI-109249]**

**Responsible:** Prof. Dr. Ali Sunyaev  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Events					
ST 2024	2512400	<a href="#">Advanced Lab Development of Sociotechnical Information Systems (Bachelor)</a>	3 SWS	Practical course / 	Sunyaev, Leiser
ST 2024	2512401	<a href="#">Advanced Lab Development of Sociotechnical Information Systems (Master)</a>	3 SWS	Practical course / 	Sunyaev, Leiser
Exams					
ST 2024	7900173	<a href="#">Advanced Lab Development of Sociotechnical Information Systems (Master)</a>			Sunyaev
WT 24/25	7900080	<a href="#">Advanced Lab Development of Sociotechnical Information Systems (Bachelor)</a>			Sunyaev
WT 24/25	7900143	<a href="#">Advanced Lab Development of Sociotechnical Information Systems (Master)</a>			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

**Advanced Lab Development of Sociotechnical Information Systems (Bachelor)**

2512400, SS 2024, 3 SWS, Language: German/English, [Open in study portal](#)

**Practical course (P)**  
**Blended (On-Site/Online)**

**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

**Advanced Lab Development of Sociotechnical Information Systems (Master)**

2512401, SS 2024, 3 SWS, Language: German/English, [Open in study portal](#)

**Practical course (P)**  
**Blended (On-Site/Online)**

**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.

**7.222 Course: Software Quality Management [T-WIWI-102895]**

**Responsible:** Prof. Dr. Andreas Oberweis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Events					
ST 2024	2511208	<a href="#">Software Quality Management</a>	2 SWS	Lecture /	Alpers
ST 2024	2511209	<a href="#">Übungen zu Software-Qualitätsmanagement</a>	1 SWS	Practice /	Frister, Forell
Exams					
ST 2024	79AIFB_STQM_A5	<a href="#">Software Quality Management (Registration until 15 July 2024)</a>			Oberweis
WT 24/25	79AIFB_STQM_C1	<a href="#">Software Quality Management</a>			Oberweis

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

**Competence Certificate**

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

**Prerequisites**

None

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

**Software Quality Management**

2511208, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
On-Site**

**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 Balzer: 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

**7.223 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](#)  
[M-WIWI-101497 - Agglomeration and Innovation](#)

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

Events					
WT 24/25	2561260	<a href="#">Spatial Economics</a>	2 SWS	Lecture / 🗎	Ott
WT 24/25	2561261	<a href="#">Exercise for Spatial Economics</a>	1 SWS	Practice / 🗎	Ott, Mirzoyan
Exams					
WT 24/25	7900075	<a href="#">Spatial Economics</a>			Ott
WT 24/25	7900276	<a href="#">Spatial Economics</a>			Ott

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

**Competence Certificate**

Depending on further pandemic developments, the examination will be offered either as an open-book examination, or as a 60-minute written examination.

**Prerequisites**

None

**Recommendation**

Basic micro- and macroeconomic knowledge is required, such as that taught in the courses "Economics I" [2600012] and "Economics II" [2600014], attendance of which is strongly recommended (but not mandatory). An interest in quantitative-mathematical modeling is also a prerequisite. Attendance of the course "Introduction to Economic Policy" [2560280] is recommended.

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

V

**Spatial Economics**

2561260, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**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

**7.224 Course: Special Topics in Information Systems [T-WIWI-113727]**

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101411 - Information Engineering](#)

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

**Competence Certificate**

The assessment of this course is 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 overall grade is composed as follows:

A total of 60 points can be achieved, of which

- A maximum of 30 points for the written documentation
- A maximum of 30 points for the practical component

In order to pass the success control, at least 15 points (written documentation / practical component) must be achieved.

**Prerequisites**

see below

**Recommendation**

None

**Annotation**

All the practical seminars offered at the chair of Prof. Dr. Weinhardt can be chosen in the Special Topics in Information Systems course. The current topics of the practical seminars are available at the following homepage: [www.iism.kit.edu/im/lehre](http://www.iism.kit.edu/im/lehre).

The Special Topics Information Systems is equivalent to the practical seminar, as it was only offered for the major in "Information Systems" so far. With this course students majoring in "Industrial Engineering and Management" and "Economics Engineering" also have the chance of getting practical experience and enhance their scientific capabilities.

The Special Topics Information Systems can be chosen instead of a regular lecture (see module description). Please take into account, that this course can only be accounted once per module.

T

**7.225 Course: Special Topics in Information Systems [T-WIWI-113724]**

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101410 - Business & Service Engineering](#)

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

**Competence Certificate**

The assessment of this course is 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 overall grade is composed as follows:

A total of 60 points can be achieved, of which

- A maximum of 30 points for the written documentation
- A maximum of 30 points for the practical component

In order to pass the success control, at least 15 points (written documentation / practical component) must be achieved.

**Prerequisites**

see below

**Recommendation**

None

**Annotation**

All the practical seminars offered at the chair of Prof. Dr. Weinhardt can be chosen in the Special Topics in Information Systems course. The current topics of the practical seminars are available at the following homepage: [www.iism.kit.edu/im/lehre](http://www.iism.kit.edu/im/lehre).

The Special Topics Information Systems is equivalent to the practical seminar, as it was only offered for the major in "Information Systems" so far. With this course students majoring in "Industrial Engineering and Management" and "Economics Engineering" also have the chance of getting practical experience and enhance their scientific capabilities.

The Special Topics Information Systems can be chosen instead of a regular lecture (see module description). Please take into account, that this course can only be accounted once per module.

T

**7.226 Course: Special Topics in Information Systems [T-WIWI-113726]**

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-103720 - eEnergy: Markets, Services and Systems](#)

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

**Competence Certificate**

The assessment of this course is 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 overall grade is composed as follows:

A total of 60 points can be achieved, of which

- A maximum of 30 points for the written documentation
- A maximum of 30 points for the practical component

In order to pass the success control, at least 15 points (written documentation / practical component) must be achieved.

**Prerequisites**

see below

**Recommendation**

None

**Annotation**

All the practical seminars offered at the chair of Prof. Dr. Weinhardt can be chosen in the Special Topics in Information Systems course. The current topics of the practical seminars are available at the following homepage: [www.iism.kit.edu/im/lehre](http://www.iism.kit.edu/im/lehre).

The Special Topics Information Systems is equivalent to the practical seminar, as it was only offered for the major in "Information Systems" so far. With this course students majoring in "Industrial Engineering and Management" and "Economics Engineering" also have the chance of getting practical experience and enhance their scientific capabilities.

The Special Topics Information Systems can be chosen instead of a regular lecture (see module description). Please take into account, that this course can only be accounted once per module.

T

**7.227 Course: Special Topics in Information Systems [T-WIWI-113725]**

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101506 - Service Analytics](#)

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

**Competence Certificate**

The assessment of this course is 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 overall grade is composed as follows:

A total of 60 points can be achieved, of which

- A maximum of 30 points for the written documentation
- A maximum of 30 points for the practical component

In order to pass the success control, at least 15 points (written documentation / practical component) must be achieved.

**Prerequisites**

see below

**Recommendation**

None

**Annotation**

All the practical seminars offered at the chair of Prof. Dr. Weinhardt can be chosen in the Special Topics in Information Systems course. The current topics of the practical seminars are available at the following homepage: [www.iism.kit.edu/im/lehre](http://www.iism.kit.edu/im/lehre).

The Special Topics Information Systems is equivalent to the practical seminar, as it was only offered for the major in "Information Systems" so far. With this course students majoring in "Industrial Engineering and Management" and "Economics Engineering" also have the chance of getting practical experience and enhance their scientific capabilities.



The Special Topics Information Systems can be chosen instead of a regular lecture (see module description). Please take into account, that this course can only be accounted once per module.





T

**7.228 Course: Startup Experience [T-WIWI-111561]**

**Responsible:** Prof. Dr. Orestis Terzidis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	6	Grade to a third	Each term	1

Events					
ST 2024	2545004	<a href="#">Startup Experience</a>	4 SWS	Seminar / 	Weimar, Terzidis, Martjan, Rosales Bravo
WT 24/25	2545004	<a href="#">Startup Experience</a>	4 SWS	Seminar / 	Weimar, Martjan, Terzidis
Exams					
ST 2024	7900186	<a href="#">Startup Experience</a>			Terzidis
WT 24/25	7900186	<a href="#">Startup Experience</a>			Terzidis

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

**Competence Certificate**

Alternative exam assessment. Details on the design of the examination performance of other types will be announced in the course. The grade is composed of a presentation and a written paper (plus any specified documentation, e.g. work results, experience diary, reflection).

**Recommendation**

Lecture Entrepreneurship already completed

**Annotation**

The language in the seminar is English. The seminar contents will be published on the chair homepage.

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

V

**Startup Experience**

2545004, SS 2024, 4 SWS, Language: English, [Open in study portal](#)

**Seminar (S)  
On-Site**

## Content

In the Startup Experience seminar you will develop entrepreneurial competences that will enable you to build a new business. In an entrepreneurial project, you have three main objectives:

1. Identify and develop an opportunity. Who is your target customer and what problem or task does he or she have? How attractive and how big is this market?
2. How will you add value to it? How can you use specific resources, including technology, to develop a solution?
3. How can you design and set up a viable organisation? What business model do you propose to create, deliver and capture value?

Our primary focus is on digital healthcare ventures, granting you the opportunity to delve into the realm of entrepreneurship within the healthcare system. After gaining a deep understanding of healthcare needs, you will utilize creativity techniques to uncover potential business ideas that provide value for patients and doctors. Additionally, you will learn how to create viable business models, dive into health regulations, and pitch your idea to a jury.

### Learning Objectives

After completing this course, the course participants will be able to:

- Work effectively in a cohesive team
- Understand the role of digital entrepreneurship in healthcare
- Apply creativity techniques to ideate
- Use utility analysis approaches to select promising solutions
- Develop a value proposition based on techniques like the value proposition canvas or the jobs-to-be-done method
- Apply advanced business modeling methods to develop a sound business concept
- Develop and deliver a concise presentation ("pitch") to communicate your project
- Gain basic knowledge of healthcare regulations and reimbursement ways

### Additional information:

Alternative exam assessment. The grade consists of the presentation and the written elaboration. Potentially, a 'project diary' of the seminar progress may be part of the deliverables (depends on tutor and will be communicated at the kick-off).

For a successful course completion, we expect you to submit a Business Plan with the following features:

- Scope: 9000 words,
- Sound and clear structure,
- Expression and spelling are correct
- Complete and correct references, quotations, etc.
- Visual elements are chosen appropriately
- Documentation and traceability of data acquisition, analysis and evaluation,
- Content is developed according to the course instructions.

Furthermore, we expect you to deliver a team Pitch.

- Duration: will be communicated (typically 5-10 minutes)
- Content: Introduction/Purpose; Problem; Solution; Business Model; Prototype; Competition; Management Team; Current Status and next steps,
- Layout and form: appropriate choice,
- Appearance: appropriate amount of visual elements,
- Data: well researched and organized visually
- Story Line: is sound; clear and convincing.

### Organizational issues

Tuesday, 23.04.24

Tuesday, 30.04.24

Tuesday, 07.05.24

Tuesday, 28.05.24

Tuesday, 04.06.24

Tuesday, 18.06.24

Registration is via the Wiwi-Portal.

In the seminar you will work on a project in teams of max. 5 persons. Team applications are welcome but not a prerequisite for participation. The seminars will be held in English.



## Startup Experience

2545004, WS 24/25, 4 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**On-Site**

## Content

### Content

In the Startup Experience seminar you will develop entrepreneurial competences that will enable you to build a new business. In an entrepreneurial project, you have three main objectives:

1. Identify and develop an opportunity. Who is your target customer and what problem or task does he or she have? How attractive and how big is this market?
2. How will you add value to it? How can you use specific resources, including technology, to develop a solution?
3. How can you design and set up a viable organisation? What business model do you propose to create, deliver and capture value?

Our primary focus is on digital healthcare ventures, granting you the opportunity to delve into the realm of entrepreneurship within the healthcare system. After gaining a deep understanding of healthcare needs, you will utilize creativity techniques to uncover potential business ideas that provide value for patients and doctors. Additionally, you will learn how to create viable business models, dive into health regulations, and pitch your idea to a jury.

### Learning Objectives

After completing this course, the course participants will be able to:

- Work effectively in a cohesive team
- Understand the role of digital entrepreneurship in healthcare
- Apply creativity techniques to ideate
- Use utility analysis approaches to select promising solutions
- Develop a value proposition based on techniques like the value proposition canvas or the jobs-to-be-done method
- Apply advanced business modeling methods to develop a sound business concept
- Develop and deliver a concise presentation ("pitch") to communicate your project
- Gain basic knowledge of healthcare regulations and reimbursement ways

### Additional information:

Alternative exam assessment. The grade consists of the presentation and the written elaboration. Potentially, a 'project diary' of the seminar progress may be part of the deliverables (depends on tutor and will be communicated at the kick-off).

For a successful course completion, we expect you to submit a Business Plan with the following features:

- Scope: 9000 words,
- Sound and clear structure,
- Expression and spelling are correct
- Complete and correct references, quotations, etc.
- Visual elements are chosen appropriately
- Documentation and traceability of data acquisition, analysis and evaluation,
- Content is developed according to the course instructions.

Furthermore, we expect you to deliver a team Pitch.

- Duration: will be communicated (typically 5-10 minutes)
- Content: Introduction/Purpose; Problem; Solution; Business Model; Prototype; Competition; Management Team; Current Status and next steps,
- Layout and form: appropriate choice,
- Appearance: appropriate amount of visual elements,
- Data: well researched and organized visually
- Story Line: is sound; clear and convincing.

### Organizational issues

Registration is via the Wiwi portal.

In the seminar you will work on a project in teams of max. 5 persons. The groups are formed in the seminar.

T

## 7.229 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-106411 - Statistics & Econometrics](#)

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

Events					
WT 24/25	2521350	<a href="#">Statistical Modeling of Generalized Regression Models</a>	2 SWS	Lecture	Heller
Exams					
WT 24/25	7900146 (WS23/24)	<a href="#">Statistical Modeling of generalized regression models</a>			Heller

### Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation.

### Prerequisites

None

### Recommendation

Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics" [2520016]

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

V

### Statistical Modeling of Generalized Regression Models

2521350, WS 24/25, 2 SWS, [Open in study portal](#)

Lecture (V)

### Content

#### Learning objectives:

The student has profound knowledge of generalized regression models.

#### Requirements:

Knowledge of the contents covered by the course *Economics III: Introduction in Econometrics* [2520016].

#### Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours



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

Events					
WT 24/25	2521331	<a href="#">Stochastic Calculus and Finance</a>	2 SWS	Lecture	Safarian
WT 24/25	2521332	<a href="#">Übungen zu Stochastic Calculus and Finance</a>	2 SWS	Practice	Safarian

**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:*

**Stochastic Calculus and Finance**

2521331, WS 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**

**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 will 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

## 7.231 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	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Irregular	1

Events					
ST 2024	2577921	<a href="#">Strategy and Management Theory: Developments and "Classics" (Master)</a>	2 SWS	Seminar / 	Lindstädt
WT 24/25	2577921	<a href="#">Strategy and Management Theory: Developments and "Classics" (Master)</a>	2 SWS	Seminar / 	Lindstädt
Exams					
ST 2024	7900278	<a href="#">Strategy and Management Theory: Developments and "Classics"</a>			Lindstädt
WT 24/25	7900120	<a href="#">Strategy and Management Theory: Developments and "Classics"</a>			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 2024, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)  
On-Site

**Content**

This course covers highly topical issues of great relevance to the management of organizations. Students will be enabled to take strategic management positions. By applying appropriate models from the fields of strategy and management - or models developed in-house - participants will learn to evaluate the strategic starting position of an organization and derive precise and well-founded recommendations for action based on this.

This course offers students the opportunity to explore current management issues and sharpen their skills in strategic analysis and evaluation. Through intensive collaboration and practical application of the knowledge learned, students are optimally prepared for the demands and challenges of modern business management.

**Structure**

The course begins with an overarching theme, based on which students are divided into groups of two. The core of the course consists of the preparation of a written paper as well as the presentation and discussion of the results.

**Learning Objectives**

Upon completion of the course, students will be able to,

- analyze complex business situations, think strategically and derive sound management decisions.
- compose clear and convincing written papers that accurately present the analyses and recommendations developed.
- present results in an engaging manner and actively participate in substantive discussions.

**Recommendations:**

Prior attendance of the Bachelor's module "Strategy and Organization" or another module with comparable content at another university is recommended.

**Workload:**

Total effort approx. 90 hours

Attendance time: 15 hours

Preparation and follow-up: 75 hours

Examination and preparation: not applicable

**Verification:**

The success control according to § 4(2), 3 SPO is done by writing a scientific paper and a presentation of the results of the paper in the context of a final event. Details on the design of the performance review will be announced during the lecture.

**Annotation:**

The course is admission restricted. In case of prior admission to another course in the module "Strategy and Management: Advanced Topics" [M-WIWI-103119], participation in this course is guaranteed. For more information on the application process, see the IBU website.

Exams are offered at least every other semester, so the entire module can be completed in two semesters.

**Organizational issues**

siehe Homepage

**Strategy and Management Theory: Developments and "Classics" (Master)**

2577921, WS 24/25, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)  
On-Site**

**Content**

This course covers highly topical issues of great relevance to the management of organizations. Students will be enabled to take strategic management positions. By applying appropriate models from the fields of strategy and management - or models developed in-house - participants will learn to evaluate the strategic starting position of an organization and derive precise and well-founded recommendations for action based on this.

This course offers students the opportunity to explore current management issues and sharpen their skills in strategic analysis and evaluation. Through intensive collaboration and practical application of the knowledge learned, students are optimally prepared for the demands and challenges of modern business management.

**Structure**

The course begins with an overarching theme, based on which students are divided into groups of two. The core of the course consists of the preparation of a written paper as well as the presentation and discussion of the results.

**Learning Objectives**

Upon completion of the course, students will be able to,

- analyze complex business situations, think strategically and derive sound management decisions.
- compose clear and convincing written papers that accurately present the analyses and recommendations developed.
- present results in an engaging manner and actively participate in substantive discussions.

**Recommendations:**

Prior attendance of the Bachelor's module "Strategy and Organization" or another module with comparable content at another university is recommended.

**Workload:**

Total effort approx. 90 hours

Attendance time: 15 hours

Preparation and follow-up: 75 hours

Examination and preparation: not applicable

**Verification:**

The success control according to § 4(2), 3 SPO is done by writing a scientific paper and a presentation of the results of the paper in the context of a final event. Details on the design of the performance review will be announced during the lecture.

**Annotation:**

The course is admission restricted. In case of prior admission to another course in the module "Strategy and Management: Advanced Topics" [M-WIWI-103119], participation in this course is guaranteed. For more information on the application process, see the IBU website.

Exams are offered at least every other semester, so the entire module can be completed in two semesters.

**Organizational issues**

siehe Homepage

T

**7.232 Course: Successful Transformation Through Innovation [T-WIWI-111823]**

**Responsible:** Malte Busch  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101507 - Innovation Management](#)  
[M-WIWI-101507 - Innovation Management](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each summer term	1

**Competence Certificate**

Alternative exam assessments. The grade consists of an presentation of the results (50%) and a seminar paper (50%).

**Recommendation**

Prior attendance of the course Innovation Management [2545015] is recommended.

**Annotation**

Teaching and learning format: Seminar

T

**7.233 Course: Supplement Enterprise Information Systems [T-WIWI-110346]**

**Responsible:** Prof. Dr. Andreas Oberweis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

**Competence Certificate**

The assessment of this course is a written or (if necessary) oral examination.

**Prerequisites**

None

**Annotation**

This course can be used in particular for the acceptance of external courses whose content is in the broader area of applied informatics, but is not equivalent to another course of this topic.

T

**7.234 Course: Supplement Software- and Systemsengineering [T-WIWI-110372]**

**Responsible:** Prof. Dr. Andreas Oberweis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

**Competence Certificate**

The assessment of this course is a written or (if necessary) oral examination.

**Prerequisites**

None

**Annotation**

This course can be used in particular for the acceptance of external courses whose content is in the broader area of software and systems engineering, but cannot assigned to another course of this topic.

T


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

Events					
ST 2024	2581961	<a href="#">Supply Chain Management with Advanced Planning Systems</a>	2 SWS	Lecture / 	Göbelt, Bosch
Exams					
ST 2024	7981961	<a href="#">Supply Chain Management with Advanced Planning Systems</a>			Schultmann

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

### Competence Certificate

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

### Prerequisites

None

### Recommendation

None

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

V

## Supply Chain Management with Advanced Planning Systems

2581961, SS 2024, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
On-Site



**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

## 7.236 Course: Tax Law [T-INFO-111437]

**Responsible:** Detlef Dietrich  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101216 - Private Business Law](#)

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

Events					
ST 2024	24646	<a href="#">Tax Law</a>	2 SWS	Lecture / 	Dietrich
Exams					
ST 2024	7500120	<a href="#">Tax Law</a>			Sattler
WT 24/25	7500062	<a href="#">Tax Law</a>			Sattler, Matz

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

## T

## 7.237 Course: Telecommunication and Internet Economics [T-WIWI-102713]

**Responsible:** Prof. Dr. Kay Mitusch  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-106408 - Digital Economics](#)

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

Events					
WT 24/25	2561232	<a href="#">Telecommunication and Internet - Economics and Policy</a>	2 SWS	Lecture / 🔄	Mitusch
WT 24/25	2561233	<a href="#">Excercises to Telecommunication and Internet - Economics and Policy</a>	1 SWS	Practice / 🔄	Mitusch, Wisotzky, Corbo
Exams					
ST 2024	7900276	<a href="#">Telecommunications and Internet – Economics and Policy</a>			Mitusch

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

### 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

### Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-113147 - Telecommunications and Internet – Economics and Policy](#) must not have been started.

### 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.

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

## V

### Telecommunication and Internet - Economics and Policy

2561232, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)

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

**Content**Description:

The course provides students with a comprehensive understanding of the economic principles, dynamics, and policies that govern the telecommunication and internet industries and markets. It focuses on the infrastructure of the internet, both physical and logical.

Course Objectives:

**Understand the telecommunication and internet landscape:** Students will be introduced to the historical development, evolution, and current state of the telecommunication and internet industries. This includes technology, industrial organization, regulation, and other policies. Students will explore the emergence of modern telecommunication networks, the birth of the internet, and key milestones that have shaped the global communication landscape.

**Examine network economics:** Students will explore the unique economic characteristics of telecommunications networks, including network effects, economies of scale, the implications for investment decisions and market entry barriers, and regulatory responses.

**Analyse market structures and competition policies:** Students will dive into the various market structures that exist within the telecommunication and internet industries, including: access to the internet by users, access to the infrastructure by firms, economic interactions between the autonomous systems (i.e. sub-networks) and other players (like internet exchange points) of the internet, implications for quality of services and network neutrality. Emphasis will be placed on competitiveness of markets, resp. market power, on the role of regulation, and how they impact market dynamics.

**Investigate infrastructure investment and policy:** The course will address the significant role of infrastructure investment in the telecommunication and internet sectors. Students will analyse the economic drivers behind infrastructure construction, government policies, and regulatory frameworks that influence investment decisions.

**Address emerging trends:** The course will address the latest trends and technologies in telecommunication and the internet, such as 5G, Internet of Things (IoT), and cloud computing, content delivery networks, and their economic implications.

**Assess platform economics:** The role of digital platforms in the telecommunication and internet industries will be addressed. Students will understand platform business models and the economics of multisided markets. In this context, the "hypergiants" of the internet get into the focus as well as the challenges and opportunities they present.

Teaching Methodology:



The course will adopt a combination of lectures, case studies, and guest lectures from (industry) experts. Real-world examples will be used to illustrate economic principles in action within the telecommunication and internet sectors. A few economic models will be analysed, but most of the issues will be addressed verbally.





T

## 7.238 Course: Telecommunications and Internet – Economics and Policy [T-WIWI-113147]

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

Events					
WT 24/25	2561232	<a href="#">Telecommunication and Internet - Economics and Policy</a>	2 SWS	Lecture / 	Mitusch
WT 24/25	2561233	<a href="#">Exercices to Telecommunication and Internet - Economics and Policy</a>	1 SWS	Practice / 	Mitusch, Wisotzky, Corbo
Exams					
ST 2024	7900276	<a href="#">Telecommunications and Internet – Economics and Policy</a>	Mitusch		

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

### Competence Certificate

Students' understanding and knowledge will be assessed through either an oral or a written exam. The actual method used will be announced during the course. The course takes place every winter term, and exams are offered two times a year, in March and in September.

### Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-102713 - Telecommunication and Internet Economics](#) must not have been started.

### Recommendation

Basic knowledge of microeconomics is a precondition. Further knowledge of industrial economics or networks economics is useful, but not necessary. No prior knowledge of telecommunications or internet technologies is required.

### Annotation

Disclaimer:

German wording is sometimes provided in parallel. Some German original literature is used (especially official and legislative texts) where we will try to provide English translations in parallel.

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

V

### Telecommunication and Internet - Economics and Policy

2561232, WS 24/25, 2 SWS, Language: German/English, [Open in study portal](#)

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

**Content**Description:

The course provides students with a comprehensive understanding of the economic principles, dynamics, and policies that govern the telecommunication and internet industries and markets. It focuses on the infrastructure of the internet, both physical and logical.

Course Objectives:

**Understand the telecommunication and internet landscape:** Students will be introduced to the historical development, evolution, and current state of the telecommunication and internet industries. This includes technology, industrial organization, regulation, and other policies. Students will explore the emergence of modern telecommunication networks, the birth of the internet, and key milestones that have shaped the global communication landscape.

**Examine network economics:** Students will explore the unique economic characteristics of telecommunications networks, including network effects, economies of scale, the implications for investment decisions and market entry barriers, and regulatory responses.

**Analyse market structures and competition policies:** Students will dive into the various market structures that exist within the telecommunication and internet industries, including: access to the internet by users, access to the infrastructure by firms, economic interactions between the autonomous systems (i.e. sub-networks) and other players (like internet exchange points) of the internet, implications for quality of services and network neutrality. Emphasis will be placed on competitiveness of markets, resp. market power, on the role of regulation, and how they impact market dynamics.

**Investigate infrastructure investment and policy:** The course will address the significant role of infrastructure investment in the telecommunication and internet sectors. Students will analyse the economic drivers behind infrastructure construction, government policies, and regulatory frameworks that influence investment decisions.

**Address emerging trends:** The course will address the latest trends and technologies in telecommunication and the internet, such as 5G, Internet of Things (IoT), and cloud computing, content delivery networks, and their economic implications.

**Assess platform economics:** The role of digital platforms in the telecommunication and internet industries will be addressed. Students will understand platform business models and the economics of multisided markets. In this context, the "hypergiants" of the internet get into the focus as well as the challenges and opportunities they present.


Teaching Methodology:

The course will adopt a combination of lectures, case studies, and guest lectures from (industry) experts. Real-world examples will be used to illustrate economic principles in action within the telecommunication and internet sectors. A few economic models will be analysed, but most of the issues will be addressed verbally.

T

**7.239 Course: Telecommunications Law [T-INFO-101309]****Organisation:** KIT Department of Informatics**Part of:** [M-INFO-106754 - Public Economic and Technology Law](#)

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

Events					
ST 2024	24632	<a href="#">Telekommunikationsrecht</a>	2 SWS	Lecture / 	Döveling
Exams					
ST 2024	7500085	<a href="#">Telecommunications Law</a>			Zufall
WT 24/25	7500049	<a href="#">Telecommunications Law</a>			Zufall

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

T

**7.240 Course: The Future of Work [T-WIWI-112993]**

**Responsible:** Prof. Dr. Petra Nieken  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-106413 - Digitalization & Society](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	see Annotations	1

**Competence Certificate**

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

**Annotation**

The course will begin in the summer semester of 2025 and will be offered each summer semester.



## T

## 7.241 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**  
Written examination

**Credits**  
4,5

**Grading scale**  
Grade to a third

**Recurrence**  
Irregular

**Version**  
1

Events					
ST 2024	2560232	<a href="#">Topics in Experimental Economics</a>	2 SWS	Lecture / 🗎	Reiß, Peters
ST 2024	25602333	<a href="#">Übungen zu Topics in Experimental Economics</a>	1 SWS	Practice / 🗎	Reiß, Peters
Exams					
ST 2024	7910007	<a href="#">Topics in Experimental Economics</a>			Reiß

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).

**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

**7.242 Course: Topics in Stochastic Optimization [T-WIWI-112109]**

**Responsible:** Prof. Dr. Steffen Rebennack  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101473 - Mathematical Programming](#)  
[M-WIWI-101637 - Analytics and Statistics](#)  
[M-WIWI-102832 - Operations Research in Supply Chain Management](#)  
[M-WIWI-103289 - Stochastic Optimization](#)

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

**Competence Certificate**

Students will be given problem sets on which they work in groups. The problem sets will involve the implementation of the models presented in the course, and exploring features of these models. The groups will present their findings in front of the class. The grading will be based on the presentation.

**Recommendation**

A solid understanding of Stochastic Optimization and/or Optimization under Uncertainty as well as optimization in general is highly recommended, since we will heavily build upon basics of these areas.

**Annotation**

Teaching and learning format: Lecture and exercise

T

## 7.243 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

**Grading scale**  
Grade to a third

**Recurrence**  
Each term

**Version**  
1

Events					
ST 2024	24609	<a href="#">Trademark and Unfair Competition Law</a>	2 SWS	Lecture / 🗣️	Matz
WT 24/25	24136	<a href="#">Trademark and Unfair Competition Law</a>	2 SWS	Lecture / 🗣️	Matz
Exams					
ST 2024	7500051	<a href="#">Trademark and Unfair Competition Law</a>			Matz
WT 24/25	7500061	<a href="#">Trademark and Unfair Competition Law</a>			Matz

Legend: 📺 Online, 🔄 Blended (On-Site/Online), 🗣️ On-Site, ✖ Canceled

**Competence Certificate**

The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 60 minutes.

**Prerequisites**

None.

## T

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

Events					
ST 2024	2560230	<a href="#">Transport Economics</a>	2 SWS	Lecture	Mitusch, Szimba
ST 2024	2560231	<a href="#">Übung zu Transportökonomie</a>	1 SWS	Practice	Mitusch, Szimba, Wisotzky
Exams					
ST 2024	7900275	<a href="#">Transport Economics</a>			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 2024, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)****Content**

The course shall provide an overview of transport economics. It will be demonstrated, using new microeconomic models, which impacts regulation and pricing in transport have on the economic actions of individuals and logisticans and which benefits and costs apply. The following topics will be discussed:

- demand and supply in transport
- empirical analysis of transport demand
- assessment of transport infrastructure projects
- external effects in transport
- transport policy
- cost structures of transport infrastructure
- Project evaluation from the perspective of the public sector

**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 [http://ec.europa.eu/regional\\_policy/sources/Ben-Akiva](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.


Ortúzar, J. d. D. and Willumsen, L. (1990): Modelling Transport.





T

**7.245 Course: Trustworthy Emerging Technologies [T-WIWI-113026]**

**Responsible:** Prof. Dr. Ali Sunyaev  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101628 - Emphasis in Informatics](#)  
[M-WIWI-101630 - Electives in Informatics](#)

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

Events					
ST 2024	2511404	<a href="#">Trustworthy Emerging Technologies</a>		Lecture / 	Sunyaev, Lins
Exams					
ST 2024	7900185	<a href="#">Trustworthy Emerging Technologies</a>			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.

T

**7.246 Course: Tutoring: Training and Practice [T-WIWI-112967]****Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-106425 - Seminar Module](#)

Type	Credits	Grading scale	Recurrence	Version
Completed coursework	2	pass/fail	Each term	1

**Competence Certificate**

- Successful participation in the KIT-PEBA tutor training course "Start in die Lehre": 2 credit points.
- Successful participation in the tutor training course "Start in die Lehre" and supplementary tutoring activity over at least two semesters: 3 credit points.

**Annotation**

The successful participation in the tutor training "Start in die Lehre" of KIT-PEBA can be credited in the seminar module Wilng/TVWL M.Sc. as interdisciplinary qualification with two or three credit points.

The online application with further information can be found at <https://portal.wiwi.kit.edu/forms/form/AnerkennungTurorent%C3%A4tigkeit>.

T

**7.247 Course: Valuation [T-WIWI-102621]**

**Responsible:** Prof. Dr. Martin Ruckes  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101482 - Finance 1](#)  
[M-WIWI-101510 - Cross-Functional Management Accounting](#)  
[M-WIWI-106409 - Digital Financial Economics](#)

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

Events					
WT 24/25	2530212	<a href="#">Valuation</a>	2 SWS	Lecture / 🗎	Ruckes
WT 24/25	2530213	<a href="#">Übungen zu Valuation</a>	1 SWS	Practice / 🗎	Ruckes, Luedecke
Exams					
ST 2024	7900072	<a href="#">Valuation</a>			Ruckes
WT 24/25	7900057	<a href="#">Valuation</a>			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 24/25, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)**  
**On-Site**

**Literature****Weiterführende Literatur**

Titman/Martin (2013): *Valuation - The Art and Science of Corporate Investment Decisions*, 2nd. ed. Pearson International.





T

## 7.248 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	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Irregular	1

Events					
WT 24/25	2577922	<a href="#">Workshop Business Wargaming - Analyse strategischer Interaktionen (Master)</a>	2 SWS	Seminar / 	Lindstädt
Exams					
WT 24/25	7900172	<a href="#">Workshop Business Wargaming – Analyzing Strategic Interactions</a>			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)** Seminar (S)  
 2577922, WS 24/25, 2 SWS, Language: German, [Open in study portal](#) **On-Site**



**Content**

This course enables the simulation of strategic conflicts in which the participants assume the roles of selected actors. With the help of specially programmed wargaming software, strategic conflicts are simulated interactively and then reflected upon and discussed.

The course focuses on the simulation and analysis of real conflict situations with strategic interaction. Students gain a better understanding of the structural characteristics of strategic conflicts in the fields of economics and politics as well as the ability to derive their own strategies for action.

Through a combination of group work, simulation, and reflection, the seminar provides a learning experience that both strengthens team skills and develops analytical skills in strategic conflict. Join this seminar to gain sound insights into conflict dynamics and develop effective action strategies for complex situations.

**Learning Objectives**

Upon completion of the course, students will be able to,

- learn the basic methodologies, features and benefits of business wargaming
- improve their understanding of conflict dynamics by reflecting on strategic conflicts
- Strengthen analytical skills by processing a variety of courses of action and deriving strategies for action

**Recommendations:**

Prior attendance of the Bachelor's module "Strategy and Organization" or another module with comparable content at another university is recommended.

**Workload:**

- Total workload: approx. 90 hours
- Attendance time: 15 hours
- Preparation and follow-up: 75 hours
- Examination and preparation: not applicable

**Evidence:**

In this course, real conflict situations are simulated and analyzed with the help of various methods from business wargaming. Details on the design of the performance review will be announced during the lecture.

**Annotation:**

The course is admission restricted. In case of prior admission to another course in the module "Strategy and Management: Advanced Topics" [M-WIWI-103119], participation in this course is guaranteed. For more information on the application process, see the IBU website.

Exams are offered at least every other semester, so the entire module can be completed in two semesters.

**Organizational issues**


IBU-Seminarraum, Geb. 05.20, Raum 2A-12.1





T

## 7.249 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	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Irregular	1

Events					
ST 2024	2577923	<a href="#">Workshop aktuelle Themen Strategie und Management (Master)</a>	2 SWS	Seminar / 	Lindstädt
Exams					
ST 2024	7900122	<a href="#">Workshop Current Topics in Strategy and Management</a>			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 2024, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)  
On-Site**

**Content**

Aspects of strategic management can be found in a variety of daily events. In this course, current strategic and industrial policy issues are discussed and the exchange of ideas on current management topics is promoted.

For this purpose, practice-relevant case studies and dedicated questions are communicated to the students in advance so that they can prepare themselves individually for the discussion. The chair team actively moderates the discussion and creates typical discussion situations such as pro/con discussions and conflicting interests of different groups in order to bring opposing opinions into an exchange and to promote the power of argumentation. In this way, the discussion not only imparts knowledge about the content, but also strengthens the participants' skills by simulating real discussion situations in a management team.

In addition, company representatives and managers participate in individual case studies to strengthen the context of the content and experience the daily dynamics of discussion in strategic business areas.

**Learning Objectives:**

Students will

- are able to evaluate strategic decisions using appropriate models of strategic business management,
- are able to present and critically evaluate theoretical approaches and models in the field of strategic business management and illustrate them using practical examples, and
- have the ability to present their position convincingly through a reasoned argumentation in structured discussions.

**Recommendations:**

Previous attendance of the Bachelor's module "Strategy and Organization" or another module with comparable content at another university is recommended.

**Workload:**

Total effort approx. 90 hours

Attendance time: 15 hours

Preparation and follow-up: 75 hours

Examination and preparation: not applicable

**Evidence:**

Performance will be assessed through active discussion participation in the discussion rounds; here, adequate preparation will be expressed and a clear understanding of the topic and framework will be evident. Further details on the design of the performance assessment will be announced during the lecture.

**Annotation:**

This course is admission restricted. In case of prior admission to another course in the module "Strategy and Management: Advanced Topics"[M-WIWI-103119], participation in this course is guaranteed. For more information on the application process, see the IBU website.

Exams are offered at least every other semester so that the entire module can be completed in two semesters.