

Module Handbook

Information Engineering and Management M.Sc.

SPO 2015

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KIT DEPARTMENT OF ECONOMICS AND MANAGEMENT / KIT DEPARTMENT OF INFORMATICS



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| 5.181. Market Research - T-WIWI-107720 | 410 |
| 5.182. Marketing Analytics - T-WIWI-103139 | 412 |
| 5.183. Marketing Strategy Business Game - T-WIWI-102835 | 414 |
| 5.184. Master Thesis - T-WIWI-103142 | 416 |
| 5.185. Mathematics for High Dimensional Statistics - T-WIWI-111247 | 417 |
| 5.186. Meshes and Point Clouds - T-INFO-101349 | 418 |
| 5.187. Methods in Economic Dynamics - T-WIWI-102906 | 419 |
| 5.188. Methods in Innovation Management - T-WIWI-110263 | 420 |
| 5.189. Mixed Integer Programming I - T-WIWI-102719 | 421 |
| 5.190. Mixed Integer Programming II - T-WIWI-102720 | 422 |
| 5.191. Mobile Communication - T-INFO-101322 | 423 |
| 5.192. Model Driven Software Development - T-INFO-101278 | 424 |
| 5.193. Modeling and Analyzing Consumer Behavior with R - T-WIWI-102899 | 425 |
| 5.194. Modeling and OR-Software: Advanced Topics - T-WIWI-106200 | 426 |
| 5.195. Models of Parallel Processing - T-INFO-101365 | 427 |

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| 5.196. Multivariate Statistical Methods - T-WIWI-103124 | 428 |
| 5.197. Network Security: Architectures and Protocols - T-INFO-101319 | 429 |
| 5.198. Next Generation Internet - T-INFO-101321 | 430 |
| 5.199. Non- and Semiparametrics - T-WIWI-103126 | 431 |
| 5.200. Nonlinear Optimization I - T-WIWI-102724 | 432 |
| 5.201. Nonlinear Optimization I and II - T-WIWI-103637 | 434 |
| 5.202. Nonlinear Optimization II - T-WIWI-102725 | 436 |
| 5.203. Operations Research in Health Care Management - T-WIWI-102884 | 438 |
| 5.204. Operations Research in Supply Chain Management - T-WIWI-102715 | 439 |
| 5.205. Optimization Models and Applications - T-WIWI-110162 | 441 |
| 5.206. Optimization under Uncertainty - T-WIWI-106545 | 442 |
| 5.207. Panel Data - T-WIWI-103127 | 443 |
| 5.208. Parallel Algorithms - T-INFO-101333 | 444 |
| 5.209. Parallel Computer Systems and Parallel Programming - T-INFO-101345 | 445 |
| 5.210. Parametric Optimization - T-WIWI-102855 | 446 |
| 5.211. Patent Law - T-INFO-101310 | 448 |
| 5.212. Pattern Recognition - T-INFO-101362 | 449 |
| 5.213. Personalization and Services - T-WIWI-102848 | 450 |
| 5.214. Planning and Management of Industrial Plants - T-WIWI-102631 | 451 |
| 5.215. Portfolio and Asset Liability Management - T-WIWI-103128 | 452 |
| 5.216. Practical Course Computer Vision for Human-Computer Interaction - T-INFO-105943 | 453 |
| 5.217. Practical Course Protocol Engineering - T-INFO-104386 | 454 |
| 5.218. Practical Course: Analysis of Complex Data Sets - T-INFO-105796 | 455 |
| 5.219. Practical Course: Data Science - T-INFO-111262 | 456 |
| 5.220. Practical Course: Database Systems - T-INFO-103201 | 457 |
| 5.221. Practical Course: Geometric Modeling - T-INFO-103207 | 458 |
| 5.222. Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data - T-INFO-106219 | 459 |
| 5.223. Practical Course: Smart Data Analytics - T-INFO-106426 | 460 |
| 5.224. Practical Course: Web Applications and Service-Oriented Architectures (II) - T-INFO-103121 | 461 |
| 5.225. Practical Seminar Digital Service Systems - T-WIWI-106563 | 462 |
| 5.226. Practical Seminar: Advanced Analytics - T-WIWI-108765 | 463 |
| 5.227. Practical Seminar: Data-Driven Information Systems - T-WIWI-106207 | 464 |
| 5.228. Practical Seminar: Health Care Management (with Case Studies) - T-WIWI-102716 | 465 |
| 5.229. Practical Seminar: Information Systems and Service Design - T-WIWI-108437 | 466 |
| 5.230. Practical Seminar: Service Innovation - T-WIWI-110887 | 468 |
| 5.231. Predictive Mechanism and Market Design - T-WIWI-102862 | 469 |
| 5.232. Predictive Modeling - T-WIWI-110868 | 470 |
| 5.233. Price Management - T-WIWI-105946 | 471 |
| 5.234. Price Negotiation and Sales Presentations - T-WIWI-102891 | 472 |
| 5.235. Pricing Excellence - T-WIWI-111246 | 473 |
| 5.236. Product and Innovation Management - T-WIWI-109864 | 474 |
| 5.237. Production and Logistics Management - T-WIWI-102632 | 476 |
| 5.238. Project Lab Cognitive Automobiles and Robots - T-WIWI-109985 | 477 |
| 5.239. Project Lab Machine Learning - T-WIWI-109983 | 479 |
| 5.240. Project Management - T-WIWI-103134 | 481 |
| 5.241. Project Management in Practice - T-INFO-101976 | 482 |
| 5.242. Provable Security in Cryptography - T-INFO-101259 | 483 |
| 5.243. Psychological Processes in Individual Decisions - T-WIWI-111315 | 484 |
| 5.244. Public Management - T-WIWI-102740 | 485 |
| 5.245. Public Media Law - T-INFO-101311 | 486 |
| 5.246. Public Revenues - T-WIWI-102739 | 487 |
| 5.247. Python for Computational Risk and Asset Management - T-WIWI-110213 | 488 |
| 5.248. Quantitative Methods in Energy Economics - T-WIWI-107446 | 489 |
| 5.249. Randomized Algorithms - T-INFO-101331 | 490 |
| 5.250. Recommender Systems - T-WIWI-102847 | 491 |
| 5.251. Regulation Theory and Practice - T-WIWI-102712 | 495 |
| 5.252. Requirements Engineering - T-INFO-101300 | 496 |
| 5.253. Risk Management in Industrial Supply Networks - T-WIWI-102826 | 497 |
| 5.254. Roadmapping - T-WIWI-102853 | 498 |

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| 5.255. Robotics I - Introduction to Robotics - T-INFO-108014 | 499 |
| 5.256. Robotics II: Humanoid Robotics - T-INFO-105723 | 500 |
| 5.257. Robotics III - Sensors and Perception in Robotics - T-INFO-109931 | 501 |
| 5.258. Security - T-INFO-101371 | 502 |
| 5.259. Selected Issues in Critical Information Infrastructures - T-WIWI-109251 | 503 |
| 5.260. Selected Legal Issues of Internet Law - T-INFO-108462 | 504 |
| 5.261. Selected Topics in Cryptography - T-INFO-101373 | 505 |
| 5.262. Selling IT-Solutions Professionally - T-INFO-101977 | 506 |
| 5.263. Semantic Web Technologies - T-WIWI-110848 | 507 |
| 5.264. Seminar in Business Administration A (Master) - T-WIWI-103474 | 510 |
| 5.265. Seminar in Economic Policy - T-WIWI-102789 | 523 |
| 5.266. Seminar in Economics A (Master) - T-WIWI-103478 | 524 |
| 5.267. Seminar in Informatics B (Master) - T-WIWI-103480 | 527 |
| 5.268. Seminar in Operations Research A (Master) - T-WIWI-103481 | 533 |
| 5.269. Seminar in Statistics A (Master) - T-WIWI-103483 | 536 |
| 5.270. Seminar Informatics A - T-INFO-104336 | 538 |
| 5.271. Seminar Informatics Master - T-INFO-111205 | 540 |
| 5.272. Seminar Methods along the Innovation process - T-WIWI-110987 | 541 |
| 5.273. Seminar: Computer Science TECO - T-INFO-110808 | 542 |
| 5.274. Seminar: Governance, Risk & Compliance - T-INFO-102047 | 543 |
| 5.275. Seminar: Legal Studies I - T-INFO-101997 | 544 |
| 5.276. Service Design Thinking - T-WIWI-102849 | 546 |
| 5.277. Service Innovation - T-WIWI-102641 | 547 |
| 5.278. Signals and Codes - T-INFO-101360 | 549 |
| 5.279. Simulation Game in Energy Economics - T-WIWI-108016 | 550 |
| 5.280. Smart Energy Infrastructure - T-WIWI-107464 | 551 |
| 5.281. Smart Grid Applications - T-WIWI-107504 | 552 |
| 5.282. Social Choice Theory - T-WIWI-102859 | 553 |
| 5.283. Sociotechnical Information Systems Development - T-WIWI-109249 | 554 |
| 5.284. Software Architecture and Quality - T-INFO-101381 | 556 |
| 5.285. Software Quality Management - T-WIWI-102895 | 557 |
| 5.286. Software-Evolution - T-INFO-101256 | 559 |
| 5.287. Spatial Economics - T-WIWI-103107 | 560 |
| 5.288. Special Topics in Information Systems - T-WIWI-109940 | 562 |
| 5.289. Statistical Modeling of Generalized Regression Models - T-WIWI-103065 | 563 |
| 5.290. Stochastic Calculus and Finance - T-WIWI-103129 | 564 |
| 5.291. Strategic Finance and Technology Change - T-WIWI-110511 | 566 |
| 5.292. Strategic Foresight China - T-WIWI-110986 | 567 |
| 5.293. Strategic Management of Information Technology - T-WIWI-102669 | 568 |
| 5.294. Strategy and Management Theory: Developments and "Classics" - T-WIWI-106190 | 569 |
| 5.295. Subdivision Algorithms - T-INFO-103550 | 571 |
| 5.296. Supplement Enterprise Information Systems - T-WIWI-110346 | 572 |
| 5.297. Supply Chain Management in the Automotive Industry - T-WIWI-102828 | 573 |
| 5.298. Supply Chain Management with Advanced Planning Systems - T-WIWI-102763 | 574 |
| 5.299. Symmetric Encryption - T-INFO-101390 | 576 |
| 5.300. Tax Law I - T-INFO-101315 | 577 |
| 5.301. Tax Law II - T-INFO-101314 | 578 |
| 5.302. Technologies for Innovation Management - T-WIWI-102854 | 579 |
| 5.303. Technology Assessment - T-WIWI-102858 | 580 |
| 5.304. Telecommunication and Internet Economics - T-WIWI-102713 | 581 |
| 5.305. Telecommunications Law - T-INFO-101309 | 582 |
| 5.306. Telematics - T-INFO-101338 | 583 |
| 5.307. The negotiation of open innovation - T-WIWI-110867 | 585 |
| 5.308. Topics in Experimental Economics - T-WIWI-102863 | 586 |
| 5.309. Trademark and Unfair Competition Law - T-INFO-101313 | 587 |
| 5.310. Transport Economics - T-WIWI-100007 | 588 |
| 5.311. Ubiquitous Computing - T-INFO-101326 | 589 |
| 5.312. Valuation - T-WIWI-102621 | 590 |
| 5.313. Wearable Robotic Technologies - T-INFO-106557 | 591 |
| 5.314. Web App Programming for Finance - T-WIWI-110933 | 592 |

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| 5.315. Web Applications and Service-Oriented Architectures (II) - T-INFO-101271 | 593 |
| 5.316. Web Science - T-WIWI-103112 | 594 |
| 5.317. Workshop Business Wargaming – Analyzing Strategic Interactions - T-WIWI-106189 | 595 |
| 5.318. Workshop Current Topics in Strategy and Management - T-WIWI-106188 | 598 |

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.

1.4 General and partial examinations

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

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

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

1.5 Types of exams

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

Caution: exam type dependent on further pandemic developments

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

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

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

1.6 Repeating exams

Principally, a failed written exam, oral exam or alternative exam assessment can be repeated only once. If the repeat examination (including an eventually provided verbal repeat examination) will be failed as well, the examination claim is lost. A request for a second repetition has to be made in written form to the examination committee two months after losing the examination claim. A counseling interview is mandatory.

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

1.7 Examiners

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

1.8 Additional accomplishments

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

1.9 Further information

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

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

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

1.10 Contact persons**for Bachelor students**

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

for master students

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

editorial responsibility:

Dr. André Wiesner, KIT Department of Economics and Management
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modul@wiwi.kit.edu

2 The Master's degree program in Information Engineering and Management

2.1 Qualification objectives of the Master's program in Information Engineering and Management

Graduates of the interdisciplinary, four-semester Master's program in Information Engineering and Management have an advanced and in-depth research-based knowledge in the fields of informatics, economics and law as well as subject-independent competences that can be applied across multiple disciplines.

By combining their knowledge and competences, they are in a position to independently acknowledge economic and IT opportunities and development potentials for innovative change of structures and processes and implement them within the applicable legal framework. They are able to analyze, structure and describe complex, field-related problems and challenges.

They know how to identify advantages and disadvantages of existing procedures, models, technologies and approaches, compare alternatives, evaluate critically and apply the findings to new application areas.

If necessary, they are also in a position to combine different approaches, adapt them accordingly or even independently develop and apply new and innovative solutions.

They know how to critically interpret, validate and illustrate the achieved results.

Their decisions are made independently based on scientific facts under consideration of social and ethical aspects.

The graduates can communicate with expert representatives on a scientific level and even assume prominent responsibility in a team. Karlsruhe's Infonomics experts are characterized by their interdisciplinary methodological skills and innovative abilities.

Their qualifications are perfectly ideal particularly for interdisciplinary occupations in the fields of Information and Communication Technology (ICT), controlling, consulting, management and organization, for starting and management of firms as well as a downstream scientific career (PhD).

2.2 Structure of the Master's degree program in Information Engineering and Management SPO 2015

The Master's degree program in **Information Engineering and Management** has 4 terms. The terms 1 to 3 of the program are method-oriented and provide the students with state-of-the-art knowledge in informatics, business administration, operations research, economics, statistics and law. The interdisciplinary approach is especially emphasized in the interdisciplinary seminar.

It is recommended to study the courses in the following sequence:

- The (mandatory) modules in business administration and operations research should be studied in the first two terms of the program.
- The interdisciplinary seminar module should be taken until the end of the third term of the program.
- The (elective) modules from business administration, economics, operations research, and statistics, from informatics, and from law should be studied in the first three terms of the program.
- The 4-th term is reserved for the Master Thesis in which the student proves his ability for independent scientific research in informatics, the economic sciences, and law.

Figure 2 shows a summary of this recommendation with the structure of the disciplines and with credit points allocated to the modules of the program.

| Term | Credits | Informatics | | | | Economics and Management | | | | Law | Research Course | Master Thesis |
|------|---------|--------------|--------------|--------------|--------------|--------------------------|------------|------------------------------|-----------|-------------|---------------------------|------------------------|
| | | Electives | | | | Compulsory | Electives | | Electives | | | |
| 1 | 27 | INFO 8 CP | INFO 8 CP | | | BUS 10 CP | OR 5 CP | BUS 9 CP | | Law 9 CP | | |
| 2 | 30,5 | | | INFO 8 CP | | | | | | Law 9 CP | | |
| 3 | 32,5 | | | | INFO 9 CP | | | BUS/ECON/ OR/STAT 9 CP | | | 2 Seminars 3 CP + 3 CP | |
| 4 | 30 | | | | | | | | | | | Master Thesis 30 CP |
| 120 | | | | | | | | | | | | |

Figure 2: Structure of the Master's degree program in Information Engineering and Management SPO 2015 (Recommendation)

3 Field of study structure

| | |
|--------------------------|-------|
| Mandatory | |
| Master Thesis | 30 CR |
| Informatics | 33 CR |
| Economics and Management | 33 CR |
| Law | 18 CR |
| Research Course | 6 CR |

3.1 Master Thesis

Credits
30

| | |
|------------------|----------------------------|
| Mandatory | |
| M-WIWI-101656 | Module Master Thesis 30 CR |

3.2 Informatics

Credits
33

| Election block: Informatics (at least 33 credits) | | |
|--|---|------|
| M-INFO-101199 | Advanced Algorithms: Design and Analysis | 9 CR |
| M-INFO-101200 | Advanced Algorithms: Engineering and Applications | 9 CR |
| M-INFO-100795 | Algorithm Engineering | 5 CR |
| M-INFO-100031 | Algorithms for Routing | 5 CR |
| M-INFO-100797 | Algorithms in Cellular Automata | 5 CR |
| M-INFO-102094 | Algorithms for Visualization of Graphs | 5 CR |
| M-INFO-101173 | Algorithms II | 6 CR |
| M-INFO-102110 | Computational Geometry | 6 CR |
| M-INFO-101237 | Algorithmic Methods for Hard Optimization Problems | 5 CR |
| M-INFO-102400 | Algorithmic Methods for Network Analysis | 5 CR |
| M-INFO-100768 | Big Data Analytics | 5 CR |
| M-INFO-102773 | Big Data Analytics 2 | 3 CR |
| M-INFO-101256 | Theory and Practice of Data Warehousing and Mining | 9 CR |
| M-INFO-103294 | Wearable Robotic Technologies | 4 CR |
| M-WIWI-105366 | Artificial Intelligence | 9 CR |
| M-INFO-104447 | Automated Planning and Scheduling | 5 CR |
| M-INFO-100826 | Automated Visual Inspection and Image Processing | 6 CR |
| M-INFO-101251 | Autonomous Robotics | 9 CR |
| M-INFO-100755 | Image Data Compression | 3 CR |
| M-WIWI-104403 | Critical Digital Infrastructures | 9 CR |
| M-INFO-100780 | Deployment of Database Systems | 5 CR |
| M-INFO-101662 | Practical Course: Database Systems | 4 CR |
| M-INFO-100769 | Datamanagement in the Cloud | 5 CR |
| M-INFO-104045 | Data Privacy: From Anonymization to Access Control | 3 CR |
| M-INFO-104460 | Deep Learning and Neural Networks | 6 CR |
| M-INFO-102978 | Digital Circuits Design | 6 CR |
| M-INFO-101210 | Dynamic IT-Infrastructures | 9 CR |
| M-INFO-100736 | Introduction to Video Analysis | 3 CR |
| M-WIWI-101477 | Development of Business Information Systems | 9 CR |
| M-INFO-100799 | Formal Systems | 6 CR |
| M-INFO-100744 | Formal Systems II: Application | 5 CR |
| M-INFO-100841 | Formal Systems II: Theory | 5 CR |
| M-INFO-101198 | Advanced Topics in Cryptography | 9 CR |
| M-INFO-101205 | Future Networking | 8 CR |
| M-INFO-100730 | Geometric Optimization | 3 CR |
| M-WIWI-104520 | Human Factors in Security and Privacy | 9 CR |
| M-INFO-101208 | Innovative Concepts of Data and Information Management | 8 CR |
| M-WIWI-101456 | Intelligent Systems and Services | 9 CR |
| M-INFO-100819 | Cognitive Systems | 6 CR |
| M-INFO-101178 | Communication and Database Systems | 8 CR |
| M-INFO-101575 | Computational Complexity Theory, with a View Towards Cryptography | 6 CR |
| M-INFO-100728 | Context Sensitive Systems | 5 CR |
| M-INFO-101239 | Machine Vision | 9 CR |
| M-WIWI-103356 | Machine Learning | 9 CR |
| M-INFO-105252 | Machine Learning - Basic Methods | 5 CR |
| M-INFO-100729 | Human Computer Interaction | 6 CR |
| M-INFO-104061 | Microservice-Based Web Applications | 8 CR |
| M-INFO-100785 | Mobile Communication | 4 CR |
| M-INFO-100828 | Models of Parallel Processing | 5 CR |
| M-INFO-100825 | Pattern Recognition | 3 CR |

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|---------------|---|------|
| M-INFO-101206 | Networking | 8 CR |
| M-INFO-101204 | Networking Labs | 9 CR |
| M-INFO-100812 | Meshes and Point Clouds | 3 CR |
| M-INFO-100782 | Network Security: Architectures and Protocols | 4 CR |
| M-INFO-101207 | Networking Security - Theory and Praxis | 9 CR |
| M-INFO-100796 | Parallel Algorithms | 5 CR |
| M-INFO-102072 | Laboratory Course Algorithm Engineering | 6 CR |
| M-INFO-102807 | Practical Course: Analysis of Complex Data Sets | 4 CR |
| M-INFO-105632 | Practical Course: Data Science <small>neu</small> | 6 CR |
| M-INFO-103138 | Lab Course: Natural Language Processing and Software Engineering | 5 CR |
| M-INFO-101666 | Practical Course: Geometric Modeling | 3 CR |
| M-INFO-103302 | Lab: Graph Visualization in Practice | 5 CR |
| M-INFO-103128 | Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data | 4 CR |
| M-INFO-103235 | Practical Course: Smart Data Analytics | 6 CR |
| M-INFO-100794 | Randomized Algorithms | 5 CR |
| M-INFO-100893 | Robotics I - Introduction to Robotics | 6 CR |
| M-INFO-105328 | Seminar: Computer Science TECO | 3 CR |
| M-INFO-101202 | Software Methods | 9 CR |
| M-INFO-101201 | Software Systems | 9 CR |
| M-INFO-100806 | Language Technology and Compiler | 8 CR |
| M-INFO-100801 | Telematics | 6 CR |
| M-INFO-100789 | Ubiquitous Computing | 5 CR |
| M-WIWI-101458 | Ubiquitous Computing | 9 CR |
| M-INFO-101864 | Subdivision Algorithms | 5 CR |
| M-WIWI-105368 | Web and Data Science | 9 CR |
| M-WIWI-101455 | Web Data Management | 9 CR |
| M-INFO-101203 | Wireless Networking | 8 CR |

3.3 Economics and Management

Credits
33

| Mandatory | | |
|--|---|-------|
| M-WIWI-101443 | Information Engineering and Management | 10 CR |
| M-WIWI-103243 | Optimization under Uncertainty in Information Engineering and Management | 5 CR |
| Election block: Elective Modules in Economics and Management (9 credits) | | |
| M-WIWI-101637 | Analytics and Statistics | 9 CR |
| M-WIWI-101453 | Applied Strategic Decisions | 9 CR |
| M-WIWI-101410 | Business & Service Engineering | 9 CR |
| M-WIWI-101504 | Collective Decision Making | 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-103118 | Data Science: Data-Driven User Modeling | 9 CR |
| M-WIWI-101647 | Data Science: Evidence-based Marketing | 9 CR |
| M-WIWI-105661 | Data Science: Intelligent, Adaptive, and Learning Information Services ^{neu} | 9 CR |
| M-WIWI-105032 | Data Science for Finance | 9 CR |
| M-WIWI-104080 | Designing Interactive Information Systems | 9 CR |
| M-WIWI-102808 | Digital Service Systems in Industry | 9 CR |
| M-WIWI-103720 | eEnergy: Markets, Services and Systems | 9 CR |
| M-WIWI-101409 | Electronic Markets | 9 CR |
| M-WIWI-101451 | Energy Economics and Energy Markets | 9 CR |
| M-WIWI-101452 | Energy Economics and Technology | 9 CR |
| M-WIWI-101488 | Entrepreneurship (EnTechnon) | 9 CR |
| M-WIWI-101505 | Experimental Economics | 9 CR |
| M-WIWI-101482 | Finance 1 | 9 CR |
| M-WIWI-101483 | Finance 2 | 9 CR |
| M-WIWI-101480 | Finance 3 | 9 CR |
| M-WIWI-101471 | Industrial Production II | 9 CR |
| M-WIWI-101412 | Industrial Production III | 9 CR |
| M-WIWI-104068 | Information Systems in Organizations | 9 CR |
| M-WIWI-101478 | Innovation and Growth | 9 CR |
| M-WIWI-101507 | Innovation Management | 9 CR |
| M-WIWI-101514 | Innovation Economics | 9 CR |
| M-WIWI-101446 | Market Engineering | 9 CR |
| M-WIWI-105312 | Marketing and Sales Management | 9 CR |
| M-WIWI-101473 | Mathematical Programming | 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-101639 | Econometrics and Statistics II | 9 CR |
| M-WIWI-101502 | Economic Theory and its Application in Finance | 9 CR |
| M-WIWI-102832 | Operations Research in Supply Chain Management | 9 CR |
| M-WIWI-101506 | Service Analytics | 9 CR |
| M-WIWI-101503 | Service Design Thinking | 9 CR |
| M-WIWI-101448 | Service Management | 9 CR |
| M-WIWI-102754 | Service Economics and Management | 9 CR |
| M-WIWI-102805 | Service Operations | 9 CR |
| M-WIWI-102806 | Service Innovation, Design & Engineering | 9 CR |
| M-WIWI-103289 | Stochastic Optimization | 9 CR |
| M-WIWI-103119 | Advanced Topics in Strategy and Management | 9 CR |
| M-WIWI-101468 | Environmental Economics | 9 CR |
| M-WIWI-101485 | Transport Infrastructure Policy and Regional Development | 9 CR |

| | | |
|--|---|------|
| M-WIWI-101511 | Advanced Topics in Public Finance | 9 CR |
| M-WIWI-101496 | Growth and Agglomeration | 9 CR |
| Election block: Elective Modules in Business Administration (9 credits) | | |
| M-WIWI-101410 | Business & Service Engineering | 9 CR |
| M-WIWI-101498 | Management Accounting | 9 CR |
| M-WIWI-101510 | Cross-Functional Management Accounting | 9 CR |
| M-WIWI-101470 | Data Science: Advanced CRM | 9 CR |
| M-WIWI-103117 | Data Science: Data-Driven Information Systems | 9 CR |
| M-WIWI-103118 | Data Science: Data-Driven User Modeling | 9 CR |
| M-WIWI-101647 | Data Science: Evidence-based Marketing | 9 CR |
| M-WIWI-104080 | Designing Interactive Information Systems | 9 CR |
| M-WIWI-102808 | Digital Service Systems in Industry | 9 CR |
| M-WIWI-103720 | eEnergy: Markets, Services and Systems | 9 CR |
| M-WIWI-101409 | Electronic Markets | 9 CR |
| M-WIWI-101451 | Energy Economics and Energy Markets | 9 CR |
| M-WIWI-101452 | Energy Economics and Technology | 9 CR |
| M-WIWI-101488 | Entrepreneurship (EnTechnon) | 9 CR |
| M-WIWI-101482 | Finance 1 | 9 CR |
| M-WIWI-101483 | Finance 2 | 9 CR |
| M-WIWI-101480 | Finance 3 | 9 CR |
| M-WIWI-101471 | Industrial Production II | 9 CR |
| M-WIWI-101412 | Industrial Production III | 9 CR |
| M-WIWI-104068 | Information Systems in Organizations | 9 CR |
| M-WIWI-101507 | Innovation Management | 9 CR |
| M-WIWI-103247 | Intelligent Risk and Investment Advisory | 9 CR |
| M-WIWI-101446 | Market Engineering | 9 CR |
| M-WIWI-105312 | Marketing and Sales Management | 9 CR |
| M-WIWI-101506 | Service Analytics | 9 CR |
| M-WIWI-101503 | Service Design Thinking | 9 CR |
| M-WIWI-102754 | Service Economics and Management | 9 CR |
| M-WIWI-102806 | Service Innovation, Design & Engineering | 9 CR |
| M-WIWI-101448 | Service Management | 9 CR |
| M-WIWI-103119 | Advanced Topics in Strategy and Management | 9 CR |
| M-WIWI-105659 | Advanced Machine Learning and Data Science ^{neu} | 9 CR |

3.4 Law

Credits
18

| | | |
|---|-------------------------------|------|
| Election block: Law (18 credits) | | |
| M-INFO-101215 | Intellectual Property Law | 9 CR |
| M-INFO-101216 | Private Business Law | 9 CR |
| M-INFO-101217 | Public Business Law | 9 CR |
| M-INFO-101242 | Governance, Risk & Compliance | 9 CR |

3.5 Research Course**Credits**
6

| Election block: Research Courses Choose (2 out of 3 Modules) (2 items) | | |
|--|----------------------------------|------|
| M-INFO-101218 | Seminar Module Law | 3 CR |
| M-INFO-102822 | Seminar Module Informatics | 3 CR |
| M-WIWI-102736 | Seminar Module Economic Sciences | 3 CR |

4 Modules

M

4.1 Module: Advanced Algorithms: Design and Analysis [M-INFO-101199]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics

Credits
9

Grading scale
Grade to a tenth

Recurrence
Each term

Duration
2 terms

Level
4

Version
2

| Election block: Design and Analysis / Engineering and Applications (at least 1 item as well as at least 9 credits) | | | |
|--|--|------|---------------------------|
| T-INFO-101334 | Algorithms in Cellular Automata | 5 CR | Worsch |
| T-INFO-101331 | Randomized Algorithms | 5 CR | Worsch |
| T-INFO-101333 | Parallel Algorithms | 5 CR | Sanders |
| T-INFO-103334 | Algorithmic Methods for Hard Optimization Problems | 5 CR | Wagner |
| T-INFO-104390 | Algorithms for Visualization of Graphs | 5 CR | Wagner |
| T-INFO-104374 | Laboratory Course Algorithm Engineering | 6 CR | Sanders, Ueckerdt, Wagner |
| T-INFO-101332 | Algorithm Engineering | 5 CR | Sanders, Wagner |
| T-INFO-100002 | Algorithms for Routing | 5 CR | Wagner |

Competence Goal

The student

- knows advanced methodical approaches with respect to the design and analysis of algorithms,
- can comment on theoretical aspects of algorithmics in a qualified and well-structured manner,
- identifies algorithmic problems from different areas and can formulate these formally,
- can analyze and judge the computational complexity of algorithmic problems from different areas,
- can recognize and design suitable algorithmic techniques to solve algorithmic problems.

Content

This module conveys profound knowledge concerning theoretical aspects of algorithmics. Its focus is on the design and analysis of advanced algorithms, particularly, on algorithms for graphs, randomized algorithms, parallel algorithms and algorithms for NP-hard problems.

Workload

approx. 270h

M

4.2 Module: Advanced Algorithms: Engineering and Applications [M-INFO-101200]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics

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

| Election block: Engineering and Applications / Design and Analysis (at least 1 item as well as at least 9 credits) | | | |
|--|--|------|---------------------------|
| T-INFO-100002 | Algorithms for Routing | 5 CR | Wagner |
| T-INFO-101332 | Algorithm Engineering | 5 CR | Sanders, Wagner |
| T-INFO-101333 | Parallel Algorithms | 5 CR | Sanders |
| T-INFO-103334 | Algorithmic Methods for Hard Optimization Problems | 5 CR | Wagner |
| T-INFO-104374 | Laboratory Course Algorithm Engineering | 6 CR | Sanders, Ueckerdt, Wagner |
| T-INFO-104390 | Algorithms for Visualization of Graphs | 5 CR | Wagner |
| T-INFO-101331 | Randomized Algorithms | 5 CR | Worsch |

Competence Goal

The Student

- knows advanced methodical approaches concerning the design of algorithms and their applications,
- can comment on the practical aspects of algorithmics in a qualified and well-structured manner,
- identifies algorithmic problems from different areas of application and can formulate these formally,
- can judge the computational complexity of algorithmic problems,
- recognizes suitable algorithmic techniques for solving these problems and can transfer and apply knowledge of these techniques to new problems,
- can implement solutions based on algorithmic techniques for practical problems and can evaluate these

Prerequisites

None

Content

This module conveys profound knowledge concerning practical aspects of algorithmics and covers applications of algorithms for practical problems. Its focus is on the design, the practical implementation and the evaluation of algorithms, particularly, algorithms for graphs, parallel algorithms, algorithms for NP-hard problems, optimization algorithms inspired by nature, as well as algorithms from various areas of application.

Workload

270h

M

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

Responsible: Prof. Dr. Maxim Ulrich

Organisation: KIT Department of Economics and Management

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

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

| Mandatory | | | |
|---------------|--|------|--------|
| T-WIWI-111305 | Advanced Machine Learning and Data Science | 9 CR | Ulrich |

Competence Certificate

The assessment is carried out in form of a written thesis based on the course "Advanced Machine Learning and Data Science".

Competence Goal

Students with good technological knowledge and an affinity for IT applications solve a data science problem using modern machine learning methods. Students learn to organize themselves in a team in a goal-oriented manner and to bring an extensive software project in the field of data science and machine learning to success. In addition, students deepen their data science and machine learning skills. Students of this module are particularly well prepared for management tasks in various data science and machine learning projects.

Prerequisites

see T-WIWI-106193 "Advanced Machine Learning and Data Science".

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.

Recommendation

None

Workload

Total effort for 9 credit points: approx. 270 hours. The total workload for this module is approx. 270 hours (9 credit points). The total number of hours results from the effort for attending the internship events and the independent creation of the software solution, 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

4.4 Module: Advanced Topics in Cryptography [M-INFO-101198]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: Informatics

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

| Election block: Advanced Topics in Cryptography (at least 1 item as well as at least 9 credits) | | | |
|---|---|------|--------------|
| T-INFO-101373 | Selected Topics in Cryptography | 3 CR | Müller-Quade |
| T-INFO-101260 | Asymmetric Encryption Schemes | 3 CR | Müller-Quade |
| T-INFO-101259 | Provable Security in Cryptography | 3 CR | Hofheinz |
| T-INFO-101280 | Digital Signatures | 3 CR | Hofheinz |
| T-INFO-101279 | Cryptographic Voting Schemes | 3 CR | Müller-Quade |
| T-INFO-101360 | Signals and Codes | 3 CR | Müller-Quade |
| T-INFO-101390 | Symmetric Encryption | 3 CR | Müller-Quade |

Competence Goal

The student

- will be familiar with the theoretical foundations and the basic mechanisms of computer security and cryptography.
- can understand and explain the methods of computer security and cryptography,
- will be able to read and understand the latest scientific papers,
- will be able to critically assess appropriate security solutions, and identify weaknesses / threats,
- can design an own security solution to a given problem, (eg. later in the a master's thesis).

Prerequisites

None

Content

The module is intended to provide depth theoretical and practical aspects of IT security and cryptography.

- Development of safety goals and classification of threats.
- Formal description of authentication systems.
- Analysis of typical vulnerabilities in programs and web applications and development of appropriate protective methods / avoidance strategies
- Overview of opportunities for side channel attacks
- Introduction to key management and Public Key Infrastructure
- Presentation and comparison of current safety certifications.
- The current research issues from some of the following areas are covered:
 - Block ciphers, hash functions,
 - Public-key encryption, digital signature, key exchange.
 - Basic security protocols such as fair coin toss over the phone, Byzantine Agreement, Dutch Flower Auctions, Zero Knowledge.
 - Threat models and security definitions.
 - Modular design and protocol composition.
 - Security definitions of simulatability.
 - Universal Composability.
 - Deniability as an additional safety feature.
 - Electronic Voting.

M

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

Responsible: Prof. Dr. Berthold Wigger

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

| Election block: Electives (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 |
| Election block: Supplementary Courses (between 4,5 and 5 credits) | | | |
| 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.

Competence Goal

The student

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

Prerequisites

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.

Content

As a branch of Economics, Public Finance is concerned with the theory and policy of the public sector and its interrelations with the private sector. It analyzes the economic role of the state from a normative as well as from a positive point of view. The normative view examines efficiency- and equity-oriented motives for government intervention and develops fiscal policy guidelines. The positive view explains the actual behavior of economic agents in public sector affairs.

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

Recommendation

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

Annotation

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

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

Workload

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

M

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

Responsible: Prof. Dr. Hagen Lindstädt

Organisation: KIT Department of Economics and Management

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

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

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

Competence Certificate

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

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

Competence Goal

Students

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

Prerequisites

None

Content

The module is divided into three main topics:

The students

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

Recommendation

None

Annotation

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

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

M

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

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

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

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

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

M

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

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------|-------|---------|
| 5 | Grade to a tenth | Irregular | 1 term | German | 4 | 1 |

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

Competence Goal

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

Content

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

M

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

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

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------|-------|---------|
| 5 | Grade to a tenth | Irregular | 1 term | German | 4 | 1 |

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

Workload
150 h

M

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

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics

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

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

M

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

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

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------|-------|---------|
| 5 | Grade to a tenth | Irregular | 1 term | German | 4 | 1 |

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

M

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

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

Organisation: KIT Department of Informatics

Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 6 | Grade to a tenth | Each winter term | 1 term | German | 4 | 1 |

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

M

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

Responsible: Thomas Worsch
Organisation: KIT Department of Informatics
Part of: Informatics

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

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

M

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

Responsible: Prof. Dr. Oliver Grothe

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Elective Modules in Economics and Management)

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

| Mandatory | | | |
|---|---|--------|---------|
| T-WIWI-103123 | Advanced Statistics | 4,5 CR | Grothe |
| Election block: Supplementary Courses (between 4,5 and 5 credits) | | | |
| T-WIWI-106341 | Machine Learning 2 - Advanced Methods | 4,5 CR | Zöllner |
| T-WIWI-111247 | Mathematics for High Dimensional Statistics | 4,5 CR | Grothe |
| T-WIWI-103124 | Multivariate Statistical Methods | 4,5 CR | Grothe |

Competence Certificate

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

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

Competence Goal

A Student

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

Prerequisites

The course "*Advanced Statistics*" is compulsory.

Content

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

Annotation

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

Workload

The total workload for this module is approximately 270 hours.

M

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

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

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

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

Competence Certificate

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

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

Competence Goal

Students

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

Prerequisites

The course "Advanced Game Theory" is obligatory. Exception: The course "Introduction to Game Theory" was completed. Even those who have already successfully proven "Advanced Game Theory" in another master module can take the module. In this case you can choose freely from the rest of the offer. However, this choice can only be made by the examination office of the Department of Economics and Management.

Content

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

Recommendation

Basic knowledge in game theory is assumed.

Annotation

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

Workload

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

M

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

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

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

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

Competence Certificate

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

Competence Goal

The student

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

Prerequisites

None

Content

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

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

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

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

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

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

Workload

The total workload for this module is approximately 270 hours.

M

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

Responsible: Prof. Dr. Peter Sanders
Organisation: KIT Department of Informatics
Part of: Informatics

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

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

M

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

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 6 | Grade to a tenth | Each winter term | 1 term | German | 4 | 1 |

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

M

4.19 Module: Autonomous Robotics [M-INFO-101251]

Responsible: Prof. Dr.-Ing. Rüdiger Dillmann

Organisation: KIT Department of Informatics

Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Level | Version |
|---------|------------------|------------|----------|-------|---------|
| 9 | Grade to a tenth | Once | 2 terms | 4 | 3 |

| Election block: Autonomous Robotics (at least 1 item as well as at least 9 credits) | | | |
|---|---|------|------------------|
| T-INFO-101351 | Biologically Inspired Robots | 3 CR | Dillmann, Rönnau |
| T-INFO-109931 | Robotics III - Sensors and Perception in Robotics | 3 CR | Asfour |
| T-INFO-105723 | Robotics II: Humanoid Robotics | 3 CR | Asfour |

Prerequisites

None

M

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

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: Informatics

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

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

M

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

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------|-------|---------|
| 3 | Grade to a tenth | Irregular | 1 term | German | 4 | 1 |

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

M

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

Responsible: Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

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

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

| Election block: Compulsory Elective Courses (9 credits) | | | |
|---|--|--------|---------------|
| T-WIWI-102639 | Business Models in the Internet: Planning and Implementation | 4,5 CR | Weinhardt |
| T-WIWI-102848 | Personalization and Services | 4,5 CR | Sonnenbichler |
| T-WIWI-110887 | Practical Seminar: Service Innovation | 4,5 CR | Satzger |
| T-WIWI-102847 | Recommender Systems | 4,5 CR | Geyer-Schulz |
| T-WIWI-102641 | Service Innovation | 4,5 CR | Satzger |
| T-WIWI-109940 | Special Topics in Information Systems | 4,5 CR | Weinhardt |

Competence Certificate

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

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

Competence Goal

The student should

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

Prerequisites

None

Content

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

Recommendation

None

Annotation

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

Workload

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

M

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

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

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 6 | Grade to a tenth | Each summer term | 1 term | German | 4 | 1 |

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

M

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

Responsible: Prof. Dr. Clemens Puppe

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

| Election block: Compulsory Elective Courses () | | | |
|--|--------------------------------------|--------|--------|
| T-WIWI-102740 | Public Management | 4,5 CR | Wigger |
| T-WIWI-102859 | Social Choice Theory | 4,5 CR | Puppe |

Competence Certificate

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

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

Competence Goal

Students

- are able to model practical problems of the public sector and to analyze them with respect to positive and normative questions,
- understand individual incentives and social outcomes of different institutional designs,
- are familiar with the functioning and design of democratic elections and can analyze them with respect to their individual incentives.

Prerequisites

None

Content

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

Workload

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

M

4.25 Module: Communication and Database Systems [M-INFO-101178]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Prof. Dr. Martina Zitterbart

Organisation: KIT Department of Informatics

Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 8 | Grade to a tenth | Each summer term | 1 term | German | 4 | 1 |

| Mandatory | | | |
|---------------|-----------------------------------|------|------------|
| T-INFO-101497 | Database Systems | 4 CR | Böhm |
| T-INFO-102015 | Introduction in Computer Networks | 4 CR | Zitterbart |

Competence Goal

The students will

- have learned fundamentals of data communication as well as the design of communication systems,
- be familiar with the composition of the different protocols and their mechanisms and be able to design simple protocols on their own,
- have understood the relationships between the different communication layers,
- be able to explain the benefits of database technology at the end of the course,
- have understood the development of database applications and be able to set up and access simple databases,
- be familiar with the terminology and the underlying database theory.

Content

Distributed information systems are worldwide information repositories which are accessible by everybody at any place of the world at any time. The physical distance is bridged by telecommunication systems, while database management technology manages and coordinates data for arbitrary periods of time. In order to understand globally running processes, one has to understand both data transmission techniques and database technology. Besides the telecommunication and database technologies on their own, an understanding of their cooperation is required, too.

Workload

approx. 240 h

M

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

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------|-------|---------|
| 6 | Grade to a tenth | Irregular | 1 term | German | 4 | 1 |

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

M

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

Responsible: Jun.-Prof. Dr. Thomas Bläsius
Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------|-------|---------|
| 6 | Grade to a tenth | Irregular | 1 term | German | 4 | 2 |

| Mandatory | | | |
|---------------|--|------|--------|
| T-INFO-104429 | Computational Geometry | 6 CR | Wagner |

M

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

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 5 | Grade to a tenth | Each summer term | 1 term | German | 4 | 2 |

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

M

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

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

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

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

Competence Certificate

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

The learning control is described in each course. The overall score of the module is made up of the sub-scores weighted with creditpoints and is cut off after the first comma point.

Competence Goal

The students ...

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

Prerequisites

None

Content

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

Recommendation

The courses in the module may be held in English. Participants should be well versed in written and spoken English. The courses can be visited independently. Participants can start the module in the winter as well as in the summer term. Programming skills may be required in some courses. Experience in writing scientific papers is helpful but not required.

Annotation

This new module can be chosen from summer term 2018.

Workload

30 hours per ECTS
 Total workload for 9 ECTS: approx. 270 hours
 The exact allocation is made according to the credit points of the courses.

M

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

Responsible: Prof. Dr. Marcus Wouters

Organisation: KIT Department of Economics and Management

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

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

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

Competence Certificate

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

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

Competence Goal

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

Prerequisites

The course "Advanced Management Accounting" is compulsory.

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

Content

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

Recommendation

None

Annotation

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

Workload

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

M

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

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------|-------|---------|
| 3 | Grade to a tenth | Irregular | 1 term | German | 4 | 1 |

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

M

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

Responsible: Prof. Dr. Maxim Ulrich

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

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

Competence Certificate

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

The alternative exam assessment consists of a Python-based "Takehome Exam". At the end of the third week of January, the student is given a "Takehome Exam" which he processes and sends back independently within 4 hours using Python. Precise instructions will be announced at the beginning of the course. The alternative exam assessment can be repeated a maximum of once. A timely repeat option takes place at the end of the third week in March of the same year. More detailed instructions will be given at the beginning of the course.

Competence Goal

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

Content

The course covers several topics, among them:

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

Recommendation

Basic knowledge of capital market theory.

Workload

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

M

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

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

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

| Election block: Compulsory Elective Courses (9 credits) | | | |
|---|--|--------|----------------------|
| T-WIWI-109921 | Advanced Machine Learning | 4,5 CR | Geyer-Schulz, Nazemi |
| T-WIWI-111219 | Artificial Intelligence in Service Systems - Applications in Computer Vision | 4,5 CR | Satzger |
| T-WIWI-102762 | Business Dynamics | 4,5 CR | Geyer-Schulz, Glenn |
| T-WIWI-111267 | Intelligent Agent Architectures | 4,5 CR | Geyer-Schulz |
| T-WIWI-110915 | Intelligent Agents and Decision Theory | 4,5 CR | Geyer-Schulz |
| T-WIWI-102848 | Personalization and Services | 4,5 CR | Sonnenbichler |
| T-WIWI-102847 | Recommender Systems | 4,5 CR | Geyer-Schulz |

Competence Certificate

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

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

Competence Goal

The student

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

Prerequisites

None

Content

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

Recommendation

None

Annotation

The module is replaced by M-WIWI-105661 "Data Science: Intelligent, adaptive, and learning information services" starting summer term 2021.

Workload

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

M

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

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

Organisation: KIT Department of Economics and Management

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

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

| Election block: Compulsory Elective Courses () | | | |
|--|--|--------|------------------------------------|
| T-WIWI-108715 | Artificial Intelligence in Service Systems | 4,5 CR | Satzger |
| T-WIWI-111219 | Artificial Intelligence in Service Systems - Applications in Computer Vision | 4,5 CR | Satzger |
| T-WIWI-109863 | Business Data Analytics: Application and Tools | 4,5 CR | Weinhardt |
| T-WIWI-106187 | Business Data Strategy | 4,5 CR | Weinhardt |
| T-WIWI-105777 | Business Intelligence Systems | 4,5 CR | Mädche, Nadj, Toreini |
| T-WIWI-110918 | Introduction to Bayesian Statistics for Analyzing Data | 3 CR | Scheibehenne |
| T-WIWI-106207 | Practical Seminar: Data-Driven Information Systems | 4,5 CR | Mädche, Satzger, Setzer, Weinhardt |

Competence Certificate

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

Competence Goal

The student

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

Prerequisites

None.

Content

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

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

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

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

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

Texteintrag

Recommendation

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

Annotation

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

M

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

Responsible: Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

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

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

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

Competence Certificate

The assessment is carried out as partial exams of the core course and further single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

Competence Goal

Students of this module

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

Prerequisites

None

Content

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

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

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

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

Recommendation

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

M

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

Responsible: Prof. Dr. Martin Klarmann

Organisation: KIT Department of Economics and Management

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

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

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

Competence Certificate

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

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

Competence Goal

Students

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

Prerequisites

Keine.

Content

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

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

Recommendation

None

Workload

The total workload for this module is approximately 270 hours.

M

4.37 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: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

| Election block: Compulsory Elective Courses (9 credits) | | | |
|---|--|--------|----------------------|
| T-WIWI-109921 | Advanced Machine Learning | 4,5 CR | Geyer-Schulz, Nazemi |
| T-WIWI-111219 | Artificial Intelligence in Service Systems - Applications in Computer Vision | 4,5 CR | Satzger |
| T-WIWI-102762 | Business Dynamics | 4,5 CR | Geyer-Schulz, Glenn |
| T-WIWI-111267 | Intelligent Agent Architectures | 4,5 CR | Geyer-Schulz |
| T-WIWI-110915 | Intelligent Agents and Decision Theory | 4,5 CR | Geyer-Schulz |
| T-WIWI-102848 | Personalization and Services | 4,5 CR | Sonnenbichler |
| T-WIWI-102847 | Recommender Systems | 4,5 CR | Geyer-Schulz |

Competence Certificate

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

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

Competence Goal

The student

- 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.

Prerequisites

None

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.

Recommendation

None

Annotation

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

Workload

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

M

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

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------|-------|---------|
| 5 | Grade to a tenth | Irregular | 1 term | German | 4 | 1 |

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

M

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

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 6 | Grade to a tenth | Each summer term | 1 term | German | 4 | 1 |

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

M

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

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: Informatics

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

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

M

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

Responsible: Prof. Dr. Alexander Mädche

Organisation: KIT Department of Economics and Management

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

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

| Mandatory | | | |
|---|--|--------|-----------|
| T-WIWI-110851 | Designing Interactive Systems | 4,5 CR | Mädche |
| Election block: Supplementary Courses (at most 4,5 credits) | | | |
| T-WIWI-110877 | Engineering Interactive Systems | 4,5 CR | |
| T-WIWI-111109 | KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics | 4,5 CR | Weinhardt |
| T-WIWI-108437 | Practical Seminar: Information Systems and Service Design | 4,5 CR | Mädche |

Competence Certificate

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

Competence Goal

The student

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

Prerequisites

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

Content

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

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

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

Annotation

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

Workload

The total workload for this module is approximately 270 hours.

M

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

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

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

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

Competence Certificate

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

Competence Goal

Students

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

Prerequisites

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

Content

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

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

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

Annotation

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

Workload

See German version

M

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

Responsible: Prof. Dr.-Ing. Uwe Hanebeck
Organisation: KIT Department of Informatics
Part of: Informatics

| | | | | | | |
|---------------------|--|---------------------------------------|---------------------------|---------------------------|-------------------|---------------------|
| Credits 6 | Grading scale Grade to a tenth | Recurrence Each summer term | Duration 1 term | Language German | Level 4 | Version 1 |
|---------------------|--|---------------------------------------|---------------------------|---------------------------|-------------------|---------------------|

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

M

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

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

Organisation: KIT Department of Economics and Management

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

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

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

Competence Certificate

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

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

Competence Goal

Students

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

Prerequisites

This module can only be assigned as an elective module.

Content

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

Recommendation

None

Annotation

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

Workload

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

M

4.45 Module: Dynamic IT-Infrastructures [M-INFO-101210]

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

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

| Election block: Dynamic IT-Infrastructures (at least 1 item as well as at least 9 credits) | | | |
|--|--|------|-------------|
| T-INFO-101323 | IT-Security Management for Networked Systems | 5 CR | Hartenstein |
| T-INFO-101326 | Ubiquitous Computing | 5 CR | Beigl |
| T-INFO-101276 | Data and Storage Management | 4 CR | Neumair |
| T-INFO-101284 | Integrated Network and Systems Management | 4 CR | Neumair |
| T-INFO-101298 | Distributed Computing | 4 CR | Streit |
| T-INFO-101345 | Parallel Computer Systems and Parallel Programming | 4 CR | Streit |
| T-INFO-106061 | Access Control Systems: Foundations and Practice | 5 CR | Hartenstein |

Competence Goal

The students will get to know established as well as novel concepts for the design, implementation, operation and management of dynamic IT infrastructures (Web, Grid, Cloud, Internet):

- Getting to know established and novel concepts for IT infrastructures
- Application of methods for the evaluation and analysis of dynamic IT infrastructures
- Assessment of tools, protocols and procedures for the operation and management of dynamic IT infrastructures
- Assessment of the strengths and weaknesses of IT infrastructures
- Insight into the practical operation of dynamic IT infrastructures using the example of the operation within the Steinbuch Centre for Computing (SCC)

Prerequisites

None

Content

This module covers various aspects of dynamic IT infrastructures such as layout, design, concept, development, operation and performance evaluation as well as optimization. These topics are considered from a theoretical-analytical approach as well as from the perspective of the practical experiences of day-to-day use. Being a modern IT service provider, the *Steinbuch Centre for Computing (SCC)* serves as object of study, since it combines both aspects in real life.

M

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

Responsible: Prof. Dr. Melanie Schienle

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

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

Competence Certificate

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

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

Competence Goal

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

Prerequisites

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

Content

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

Workload

The total workload for this module is approximately 270 hours.

M

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

Responsible: Prof. Dr. Melanie Schienle

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Elective Modules in Economics and Management)

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

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

Competence Certificate

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

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

Competence Goal

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

Prerequisites

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

Content

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

Workload

The total workload for this module is approximately 270 hours.

M

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

Responsible: Prof. Dr. Kay Mitusch

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

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

Competence Certificate

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

Competence Goal

The students

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

Prerequisites

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

Content

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

Workload

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

M

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

Responsible: Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

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

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

| Election block: Compulsory Elective Courses (at least 9 credits) | | | |
|--|---|--------|-----------|
| T-WIWI-107501 | Energy Market Engineering | 4,5 CR | Weinhardt |
| T-WIWI-107503 | Energy Networks and Regulation | 4,5 CR | Weinhardt |
| T-WIWI-107504 | Smart Grid Applications | 4,5 CR | Weinhardt |
| T-WIWI-109940 | Special Topics in Information Systems | 4,5 CR | Weinhardt |

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately. The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The student

- is aware of design options for energy and especially electricity markets and can derive implications for the market results from the market design,
- knows about current trends regarding the Smart Grid and understands affiliated modelling approaches,
- can evaluate business models of electricity grids according to the regulation regime
- is prepared for scientific contributions in the field of energy system analysis.

Prerequisites

None.

Content

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

Annotation

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

Workload

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

M

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

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

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

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

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.

Competence Goal

The student

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

Prerequisites

None

Content

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

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

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

Topics include:

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

Recommendation

None

Workload

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

M

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

Responsible: Prof. Dr. Wolf Fichtner

Organisation: KIT Department of Economics and Management

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

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

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

Competence Certificate

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

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

Competence Goal

The student

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

Prerequisites

The lecture Liberalised Power Markets has to be examined.

Content

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

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

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

Recommendation

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

Workload

The total workload for this module is approximately 270 hours.

M

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

Responsible: Prof. Dr. Wolf Fichtner

Organisation: KIT Department of Economics and Management

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

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

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

Competence Certificate

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

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

Competence Goal

The student

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

Prerequisites

None

Content

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

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

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

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

Workload

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

M

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

Responsible: Prof. Dr. Orestis Terzidis

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Elective Modules in Economics and Management)
Economics and Management (Elective Modules in Business Administration)

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

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

Competence Certificate

See German version.

Competence Goal

See German version.

Prerequisites

None

Recommendation

None

Workload

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

M

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

Responsible: Prof. Dr. Kay Mitusch

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

| Election block: Compulsory Elective Courses (at least 9 credits) | | | |
|--|--|--------|-----------------|
| T-WIWI-102650 | Energy and Environment | 4,5 CR | Karl |
| T-WIWI-100007 | Transport Economics | 4,5 CR | Mitusch, Szimba |
| T-WIWI-102615 | Environmental Economics and Sustainability | 3 CR | Walz |
| T-WIWI-102616 | Environmental and Resource Policy | 4 CR | Walz |
| T-BGU-111102 | Environmental Law | 3 CR | |

Competence Certificate

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

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

Competence Goal

The students

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

Prerequisites

None

Content

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

Recommendation

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

Workload

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

M

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

Responsible: Prof. Dr. Johannes Philipp Reiß

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

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

Competence Certificate

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

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

Competence Goal

Students

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

Prerequisites

None.

Content

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

Recommendation

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

Annotation

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

Workload

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

M

4.56 Module: Finance 1 [M-WIWI-101482]

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

Organisation: KIT Department of Economics and Management

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

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

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

Competence Certificate

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

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

Competence Goal

The student

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

Prerequisites

None

Content

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

Workload

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

M

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

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

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Elective Modules in Economics and Management)
Economics and Management (Elective Modules in Business Administration)

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

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

Competence Certificate

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

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

Competence Goal

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

Prerequisites

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

Content

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

Annotation

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

Workload

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

M

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

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

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Elective Modules in Economics and Management)
Economics and Management (Elective Modules in Business Administration)

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

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

Competence Certificate

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

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

Competence Goal

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

Prerequisites

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

Content

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

Workload

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

M

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

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 6 | Grade to a tenth | Each winter term | 1 term | German | 4 | 1 |

| Mandatory | | | |
|---------------|--------------------------------|------|---------|
| T-INFO-101336 | Formal Systems | 6 CR | Beckert |

M

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

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: Informatics

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

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

M

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

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: Informatics

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

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

M

4.62 Module: Future Networking [M-INFO-101205]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Level | Version |
|---------|------------------|------------|----------|-------|---------|
| 8 | Grade to a tenth | Each term | 1 term | 4 | 3 |

| Election block: Future Networking (at least 1 item as well as at least 8 credits) | | | |
|---|--|------|-----------------------|
| T-INFO-101321 | Next Generation Internet | 4 CR | Bless, Zitterbart |
| T-INFO-101322 | Mobile Communication | 4 CR | Waldhorst, Zitterbart |
| T-INFO-101337 | Internet of Everything | 4 CR | Zitterbart |
| T-INFO-101338 | Telematics | 6 CR | Zitterbart |

Competence Goal

Each student should be able

- to learn and use the concepts and principals of future network design
- to identify the flaws and benefits of future communication systems
- to judge the performance of protocols, future networks and architectures
- master advanced protocols, architectures and algorithms of future communication systems

Content

This module details selected aspects of future communication systems. This includes beside the requirements of secure and multimedia-based communication also the realization and controllability of large communication systems and networks. An important aspect is benchmarking and mastering the used algorithms, protocols and architectures. Also actual developments and applications are in the focus of this module.

M

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

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------|-------|---------|
| 3 | Grade to a tenth | Irregular | 1 term | German | 4 | 1 |

| Mandatory | | | |
|---------------|---------------------------------------|------|-----------|
| T-INFO-101267 | Geometric Optimzation | 3 CR | Prautzsch |

M

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

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

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

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

M

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

Responsible: Prof. Dr. Ingrid Ott

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

| Election block: Compulsory Elective Courses (9 credits) | | | |
|---|--|--------|-------|
| T-WIWI-109194 | Dynamic Macroeconomics | 4,5 CR | Brumm |
| T-WIWI-103107 | Spatial Economics | 4,5 CR | Ott |
| T-WIWI-111318 | Growth and Development | 4,5 CR | Ott |

Competence Certificate

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

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

Competence Goal

The student

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

Prerequisites

None

Content

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

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

Recommendation

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

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

Workload

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

M

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

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 6 | Grade to a tenth | Each summer term | 1 term | German | 4 | 1 |

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

M

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

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: Informatics

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

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

Competence Certificate

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

Competence Goal

Students ...

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

Prerequisites

None

Content

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

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

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

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

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

Annotation

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

Workload

The total workload for this module is approximately 270 hours.

M

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

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 3 | Grade to a tenth | Each winter term | 1 term | English | 4 | 1 |

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

M

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

Responsible: Prof. Dr. Frank Schultmann

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Elective Modules in Economics and Management)
Economics and Management (Elective Modules in Business Administration)

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

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

Competence Certificate

The assessment is carried out as partial exams (according to section 4 (2), 1 SPO) of the core course *Planning and Managing of Industrial Plants* [2581952] and one further single course of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

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

Competence Goal

- Students shall be able to describe the tasks of tactical production management with special attention drawn upon industrial plants.
- Students shall understand the relevant tasks in plant management (projection, realisation and supervising tools for industrial plants).
- Students shall be able to describe the special need of a techno-economic approach to solve problems in the field of tactical production management.
- Students shall be proficient in using selected techno-economic methods like investment and cost estimates, plant layout, capacity planning, evaluation principles of production techniques, production systems as well as methods to design and optimize production systems.
- Students shall be able to evaluate techno-economical approaches in planning tactical production management with respect to their efficiency, accuracy and relevance for industrial use.

Prerequisites

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

Content

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

Annotation

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

Workload

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

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

M

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

Responsible: Prof. Dr. Frank Schultmann

Organisation: KIT Department of Economics and Management

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

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

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

Competence Certificate

The assessment is carried out as partial exams (according to section 4 (2), 1 SPO) of the core course *Production and Logistics Management* [2581954] and further single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

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

Competence Goal

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

Prerequisites

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

Content

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

Annotation

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

Workload

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

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

M

4.71 Module: Information Engineering and Management [M-WIWI-101443]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

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

| Credits | Grading scale | Recurrence | Duration | Level | Version |
|---------|------------------|------------|----------|-------|---------|
| 10 | Grade to a tenth | Each term | 2 terms | 4 | 3 |

| Mandatory | | | |
|---------------|---|------|-------------------|
| T-WIWI-110373 | Advanced Information Systems | 5 CR | Mädche, Weinhardt |
| T-WIWI-102886 | Business Administration in Information Engineering and Management | 5 CR | Geyer-Schulz |

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of each course of this module, whose sum of credits 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,
- evaluates informations flows and the value of information in an interdisciplinary context,
- works out solutions in teams,
- transfers models from Business Administration to situations in business whose basic conditions are changed due to the implementation of information and communication technology,
- applies methods from Business Administration (Decision theory, game theory, operations research, etc.) to questions of Information Engineering and Management,
- analyzes the potential to automatize the decision making process in businesses by data bases,
- describes the process to extract relevant data for decision making from operational accounting systems.

Content

The module Information Engineering and Management comprises the lectures Advanced Information Systems and Business Administration in Information Engineering and Management.

In the lecture Advanced Information Systems, a clear distinction of information as a production, competitive, and economic good is introduced. The central role of information is explained through the concept of the information lifecycle. The single phases from extraction/generation through storage transformation and evaluation until the marketing and usage of information are analyzed from the business administration perspective and the microeconomic perspective. The state of the art of economic theory is presented throughout the different phases of the information lifecycle. The lecture is complemented by accompanying exercise courses.

In the lecture Business Administration in Information Engineering and Management, classical Business Administration is applied to businesses in an information- and communication technological environment. The process to extract relevant data for decision making from operational accounting systems receives special attention. In order to do so, topics such as activity-based costing and transaction costs models are addressed. The automatization of the decision making process in businesses by data bases is another focus of the module. To solve such issues within a company, relevant methods such as decision theory and game theory are lectured. Finally, complex business relevant questions in a dynamically changing environment are adressed by presenting models and methods from system dynamics.

M

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

Responsible: Prof. Dr. Alexander Mädche

Organisation: KIT Department of Economics and Management

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

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

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

Competence Certificate

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

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

Competence Goal

The student

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

Prerequisites

None

Content

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

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

Annotation

New module starting summer term 2018.

Workload

The total workload for this module is approximately 270 hours.

M

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

Responsible: Prof. Dr. Ingrid Ott

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

| Election block: Compulsory Elective Courses (between 9 and 10 credits) | | | |
|--|--|--------|-------|
| T-WIWI-109194 | Dynamic Macroeconomics | 4,5 CR | Brumm |
| T-WIWI-102840 | Innovation Theory and Policy | 4,5 CR | Ott |
| T-WIWI-111318 | Growth and Development | 4,5 CR | Ott |

Competence Certificate

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

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

Competence Goal

Students shall be given the ability to

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

Prerequisites

None

Content

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

Recommendation

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

Workload

Total expenditure of time for 9 credits: 270 hours

Attendance time per lecture: 3x14h

Preparation and wrap-up time per lecture: 3x14h

Rest: Exam Preparation

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

M

4.74 Module: Innovation Economics [M-WIWI-101514]

Responsible: Prof. Dr. Ingrid Ott

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

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

Competence Certificate

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

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

Competence Goal

Students shall be given the ability to

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

Prerequisites

None

Content

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

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

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

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

Recommendation

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

Workload

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

M

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

Responsible: Prof. Dr. Marion Weissenberger-Eibl

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Elective Modules in Economics and Management)
Economics and Management (Elective Modules in Business Administration)

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

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

Competence Certificate

See German version.

Competence Goal

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

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

Prerequisites

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

Content

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

Recommendation

None

Workload

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

M

4.76 Module: Innovative Concepts of Data and Information Management [M-INFO-101208]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Level | Version |
|---------|------------------|------------|----------|-------|---------|
| 8 | Grade to a tenth | Each term | 1 term | 4 | 3 |

| Election block: Innovative Concepts of Data and Information Management (at least 1 item as well as at least 8 credits) | | | |
|--|--|--------|------|
| T-INFO-101305 | Big Data Analytics | 5 CR | Böhm |
| T-INFO-101306 | Datamanagement in the Cloud | 5 CR | Böhm |
| T-INFO-101317 | Deployment of Database Systems | 5 CR | Böhm |
| T-INFO-101975 | Consulting in Practice | 1,5 CR | Böhm |
| T-INFO-101976 | Project Management in Practice | 1,5 CR | Böhm |
| T-INFO-101977 | Selling IT-Solutions Professionally | 1,5 CR | Böhm |
| T-INFO-105742 | Big Data Analytics 2 | 3 CR | Böhm |
| T-INFO-108377 | Data Privacy: From Anonymization to Access Control | 3 CR | Böhm |

Competence Certificate

Siehe Teilleistung.

Competence Goal

The students

- know the research area of information systems in its various facets and are able to do scientific work in this area,
- are able to develop complex information systems on their own,
- are able to structure and manage complex projects in the field of information systems with unpredictable difficulties,
- are able to explain and to discuss complex aspects of the topics covered by this module with both experts and informed outsiders.

Prerequisites

None

Content

This module aims at exposing students to modern information management, both, in 'breadth' and 'depth'. We achieve 'breadth' by means of a close inspection and comparison of different systems and their respective aims. We achieve 'depth' by means of an extensive examination of the underlying concepts and design alternatives, their assessment as well as by discussing applications.

Annotation

The courses of this module are offered irregularly. Nonetheless, it is guaranteed that the module can be passed anytime.

M

4.77 Module: Intellectual Property Law [M-INFO-101215]

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

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

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

Prerequisites
None

M

4.78 Module: Intelligent Risk and Investment Advisory [M-WIWI-103247]

Responsible: Prof. Dr. Maxim Ulrich

Organisation: KIT Department of Economics and Management

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

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

| Election block: Wahlpflichtangebot (9 credits) | | | |
|--|--|--------|--------|
| T-WIWI-106442 | Building Intelligent and Robo-Advised Portfolios | 9 CR | Ulrich |
| T-WIWI-107032 | Computational Risk and Asset Management I | 4,5 CR | Ulrich |
| T-WIWI-106494 | Computational Risk and Asset Management II | 4,5 CR | Ulrich |
| T-WIWI-106193 | Engineering FinTech Solutions | 9 CR | Ulrich |

Competence Certificate

The module will be cancelled for the winter semester 2019/2020.

The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately. The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

Students obtain a practical and yet research oriented introduction into the field of quantitative and computational risk and investment management. Students learn how to use concepts from computer science, statistics, OR and economics to build intelligent risk and investment systems. Based on personal preferences, students can specialize within the module on either more practical programming and statistical learning points or more on the economic and mathematical insights and intuition.

After successful completion of the module, students know the industry intuition as well as state-of-the-art academic 'financial engineering' methods necessary to successfully contribute to sustainable and value oriented innovations in the field of intelligent risk and investment advisory.

Prerequisites

None.

Content

The lecture "Building Intelligent and Robo-Advised Portfolios" offers an application-oriented introduction to intelligent and automated portfolio management.

The lectures "Computational Risk and Asset Management" offer an application-oriented introduction to financial market modeling with modern statistical concepts. The acquired knowledge is helpful for quantitative industry internships and jobs, as well as for further quantitative and/or data analysis oriented lectures/seminars/final papers at FBV and other KIT institutes. In terms of content, the student learns to analyse fundamental problems of financial market modelling, such as the prediction of returns, risk distributions and risk premiums, using probabilistic concepts and to solve them independently using modern software. The intuitive and at the same time rigorous interaction of statistical modelling on the one hand and the application to new financial market problems on the other hand characterizes the teaching philosophy of the course. All necessary statistical and financial specific concepts are discussed in the lectures. The students are given numerous possibilities to solve current financial problems independently with modern software. The learning of the programming language Python is part of the teaching program.

Within the scope of the lecture "Engineering FinTech Solutions" students get the opportunity to solve a subproblem from a larger FinTech problem independently and at the same time with close mentoring - by employee and professor of the C-RAM research group. The student is introduced to the problem to be solved on the basis of his very own level of knowledge and equipped with the necessary aids. Students are given the opportunity to combine new research approaches from the field of risk and investment management with modern information technology in order to independently master a step towards prototype development. Depending on the topic, students work alone or in teams. As part of the close mentoring approach, teams will meet weekly to discuss their progress and open questions with course students and the professor.

Recommendation

None

Annotation

See respective lecture

Workload

The total workload for this module is approximately 270 hours. For further information, see respective lecture.

M

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

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

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

| Election block: Compulsory Elective Courses (between 9 and 10 credits) | | | |
|--|---|--------|---|
| T-WIWI-102661 | Database Systems and XML | 4,5 CR | Oberweis |
| T-WIWI-106423 | Information Service Engineering | 4,5 CR | Sack |
| T-WIWI-110548 | Advanced Lab Informatics (Master) | 4,5 CR | Professorenschaft des Fachbereichs Informatik |
| T-WIWI-102666 | Knowledge Discovery | 4,5 CR | Färber |
| T-WIWI-110848 | Semantic Web Technologies | 4,5 CR | Käfer |

Competence Certificate

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

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

Competence Goal

Students

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

Prerequisites

None

Content

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

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

Annotation

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

M

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

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 3 | Grade to a tenth | Each summer term | 1 term | German | 4 | 1 |

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

M

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

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

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

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

M

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

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------|-------|---------|
| 5 | Grade to a tenth | Irregular | 1 term | German | 4 | 1 |

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

M

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

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

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------------|-------|---------|
| 6 | Grade to a tenth | Irregular | 1 term | German/English | 4 | 1 |

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

M

4.84 Module: Language Technology and Compiler [M-INFO-100806]

Responsible: Prof. Dr.-Ing. Gregor Snelting
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 8 | Grade to a tenth | Each summer term | 1 term | German | 4 | 1 |

| Mandatory | | | |
|---------------|----------------------------------|------|----------|
| T-INFO-101343 | Language Technology and Compiler | 8 CR | Snelting |

M

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

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

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

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

Competence Certificate

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

Competence Goal

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

Prerequisites

None

Content

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

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

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

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

Workload

The total workload for this module is approximately 270 hours.

M

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

Responsible: Prof. Dr. Gerhard Neumann
Organisation: KIT Department of Informatics
Part of: Informatics

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

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

M

4.87 Module: Machine Vision [M-INFO-101239]

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

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

| Election block: Optional Courses (at least 1 item as well as at least 3 credits) | | | |
|--|---|------|--------------|
| T-INFO-101273 | Introduction to Video Analysis | 3 CR | Beyerer |
| T-INFO-101292 | Image Data Compression | 3 CR | Beyerer, Pak |
| T-INFO-101363 | Automated Visual Inspection and Image Processing | 6 CR | Beyerer |
| Election block: Optional Courses (at least 1 item as well as at least 6 credits) | | | |
| T-INFO-101362 | Pattern Recognition | 3 CR | Beyerer |
| T-INFO-101347 | Computer Vision for Human-Computer Interaction | 6 CR | Stiefelhagen |
| T-INFO-101297 | Biometric Systems for Person Identification | 3 CR | Stiefelhagen |
| T-INFO-105943 | Practical Course Computer Vision for Human-Computer Interaction | 6 CR | Stiefelhagen |
| T-INFO-109796 | Deep Learning for Computer Vision | 3 CR | Stiefelhagen |

M

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

Responsible: Prof. Dr. Marcus Wouters

Organisation: KIT Department of Economics and Management

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

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

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

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 13 SPO) of the courses of this module. The assessment procedures are described for each course of the module separately.

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

Competence Goal

Students

- are familiar with various management accounting methods,
- can apply these methods for cost estimation, profitability analysis, and product costing,
- are able to analyze short-term and long-decisions with these methods,
- have the capacity to devise instruments for organizational control.

Prerequisites

None

Content

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

Annotation

The following courses are part of this module:

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

Workload

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

M

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

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

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

| Mandatory | | | |
|---|--|--------|-------------------------|
| T-WIWI-102640 | Market Engineering: Information in Institutions | 4,5 CR | Weinhardt |
| Election block: Supplementary Courses (4,5 credits) | | | |
| T-WIWI-102613 | Auction Theory | 4,5 CR | Ehrhart |
| T-WIWI-108880 | Blockchains & Cryptofinance | 4,5 CR | Schuster, Uhrig-Homburg |
| T-WIWI-110797 | eFinance: Information Systems for Securities Trading | 4,5 CR | Weinhardt |
| T-WIWI-107501 | Energy Market Engineering | 4,5 CR | Weinhardt |
| T-WIWI-107503 | Energy Networks and Regulation | 4,5 CR | Weinhardt |
| T-WIWI-102614 | Experimental Economics | 4,5 CR | Weinhardt |
| T-WIWI-111109 | KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics | 4,5 CR | Weinhardt |
| T-WIWI-107504 | Smart Grid Applications | 4,5 CR | Weinhardt |

Competence Certificate

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

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

Competence Goal

The students

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

Prerequisites

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

Content

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

Recommendation

None

Annotation

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

Workload

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

M

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

Responsible: Prof. Dr. Martin Klarmann

Organisation: KIT Department of Economics and Management

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

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

| Election block: Compulsory Elective Courses (at least 1 item) | | | |
|---|---|--------|-------------------------------|
| T-WIWI-111100 | Current Directions in Consumer Psychology | 3 CR | Scheibehenne |
| T-WIWI-111099 | Judgment and Decision Making | 4,5 CR | Scheibehenne |
| T-WIWI-107720 | Market Research | 4,5 CR | Klarmann |
| T-WIWI-109864 | Product and Innovation Management | 3 CR | Klarmann |
| Election block: Supplementary Courses (at most 1 item) | | | |
| T-WIWI-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-102835 | Marketing Strategy Business Game | 1,5 CR | Klarmann |
| T-WIWI-102891 | Price Negotiation and Sales Presentations | 1,5 CR | Klarmann, Schröder |
| T-WIWI-111246 | Pricing Excellence | 1,5 CR | Bill, Klarmann |
| T-WIWI-111315 | Psychological Processes in Individual Decisions | 4,5 CR | Scheibehenne |

Competence Certificate

The assessment is carried out as partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. For passing the module exam in every singled partial exam the respective minimum requirements has to be achieved.

When every singled examination is passed, the overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

Students

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

Prerequisites

None

Content

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

Annotation

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

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

Workload

The total workload for this module is approximately 270 hours.

M

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

Responsible: Prof. Dr. Oliver Stein

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Elective Modules in Economics and Management)

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

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

Competence Certificate

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

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

Competence Goal

The student

- names and describes basic notions for advanced optimization methods, in particular from continuous and mixed integer programming,
- knows the indispensable methods and models for quantitative analysis,
- models and classifies optimization problems and chooses the appropriate solution methods to solve also challenging optimization problems independently and, if necessary, with the aid of a computer,
- validates, illustrates and interprets the obtained solutions,
- identifies drawbacks of the solution methods and, if necessary, is able to make suggestions to adapt them to practical problems.

Prerequisites

There is no compulsory course in the module.

Content

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

Annotation

The lectures are partly offered irregularly. The curriculum of the next three years is available online (www.ior.kit.edu). For the lectures of Prof. Stein a grade of 30 % of the exercise course has to be fulfilled. The description of the particular lectures is more detailed.

Workload

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

M

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

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------|-------|---------|
| 3 | Grade to a tenth | Each term | 1 term | German | 4 | 1 |

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

M

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

Responsible: Prof. Dr. Clemens Puppe

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

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

Competence Certificate

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

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

Competence Goal

Students

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

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

Prerequisites

None

Content

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

Workload

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

M

4.94 Module: Microservice-Based Web Applications [M-INFO-104061]

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 8 | Grade to a tenth | Each summer term | 1 term | German | 4 | 1 |

| Mandatory | | | |
|---------------|--|------|-------|
| T-INFO-101271 | Web Applications and Service-Oriented Architectures (II) | 4 CR | Abeck |
| T-INFO-103121 | Practical Course: Web Applications and Service-Oriented Architectures (II) | 5 CR | Abeck |

M

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

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

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

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

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

M

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

Responsible: Thomas Worsch
Organisation: KIT Department of Informatics
Part of: Informatics

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

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

Recommendation
 Siehe Teilleistung

M

4.97 Module: Module Master Thesis [M-WIWI-101656]

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

Organisation: KIT Department of Economics and Management

Part of: [Master Thesis](#)

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

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

Competence Certificate

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

Competence Goal

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

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

This is basically also done under consideration of social and/or ethical aspects.

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

He/she is in a position to sensibly structure a research paper, document results and clearly communicate the results in scientific form.

Prerequisites

Regulated in §14 of the examination regulation.

The requirements for the examiner are described in §14 (2) of the examination regulation.

Content

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

Workload

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

M

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

Responsible: Prof. Dr. Kay Mitusch

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

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

Competence Certificate

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

The exams are offered at the beginning of the recess period about the subject matter of the latest held lecture. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module separately.

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

Competence Goal

The students

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

Prerequisites

None

Content

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

Recommendation

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

Workload

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

M

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

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: Informatics

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

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

M

4.100 Module: Networking [M-INFO-101206]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Level | Version |
|---------|------------------|------------|----------|-------|---------|
| 8 | Grade to a tenth | Each term | 1 term | 4 | 4 |

| Election block: Networking (at least 1 item as well as at least 8 credits) | | | |
|--|---|------|-------------------|
| T-INFO-101321 | Next Generation Internet | 4 CR | Bless, Zitterbart |
| T-INFO-101319 | Network Security: Architectures and Protocols | 4 CR | Zitterbart |
| T-INFO-104386 | Practical Course Protocol Engineering | 4 CR | Zitterbart |
| T-INFO-101338 | Telematics | 6 CR | Zitterbart |

Competence Goal

Each student should be able

- to learn and use the concepts and principals of wired network design
- to identify the flaws and benefits of wired communication systems
- to judge the performance of protocols, wired networks and architectures
- master advanced protocols, architectures and algorithms of wired communication systems

Content

This module details selected aspects of wired communication systems. This includes beside the requirements of secure and multimedia-based communication also the realization and controllability of large communication systems and networks. An important aspect is benchmarking and mastering the used algorithms, protocols and architectures. Also actual developments and applications are in the focus of this module.

M

4.101 Module: Networking Labs [M-INFO-101204]

Responsible: Prof. Dr. Hannes Hartenstein
Prof. Dr. Martina Zitterbart

Organisation: KIT Department of Informatics

Part of: Informatics

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

| Election block: Networking Labs (at least 1 item as well as at least 9 credits) | | | |
|---|--|------|-------------|
| T-INFO-101323 | IT-Security Management for Networked Systems | 5 CR | Hartenstein |
| T-INFO-101319 | Network Security: Architectures and Protocols | 4 CR | Zitterbart |
| T-INFO-106061 | Access Control Systems: Foundations and Practice | 5 CR | Hartenstein |

Competence Goal

Each student should be able

- to learn and apply the concepts and principals of wireless network design
- to identify the flaws and benefits of wireless communication systems
- to judge the performance of protocols, wireless networks and architectures
- master advanced protocols, architectures and algorithms of wireless communication systems

Content

This module details and applies selected aspects of communication systems. This includes beside the requirements of secure and multimedia-based communication also the realization and controllability of large communication systems and networks. An important aspect is benchmarking and mastering the used algorithms, protocols and architectures. Also actual developments and applications are in the focus of this module.

M

4.102 Module: Networking Security - Theory and Praxis [M-INFO-101207]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: Informatics

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

| Election block: Networking Security - Theory and Praxis (at least 1 item as well as at least 9 credits) | | | |
|---|---|------|------------------------|
| T-INFO-101319 | Network Security: Architectures and Protocols | 4 CR | Zitterbart |
| T-INFO-101323 | IT-Security Management for Networked Systems | 5 CR | Hartenstein |
| T-INFO-101371 | Security | 6 CR | Hofheinz, Müller-Quade |
| T-INFO-101390 | Symmetric Encryption | 3 CR | Müller-Quade |

Competence Goal

Each student should be able

- to recall the basic security mechanisms and theoretical foundations of networking security and cryptography
- to read and understand actual academic papers
- to judge the security level of actual security solutions
- to identify possible attacks on security solutions

Prerequisites

None

Content

This module details selected aspects of networking security and cryptography in theory and praxis.

M

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

Responsible: Prof. Dr. Stefan Nickel

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

| Election block: Compulsory Elective Courses (at most 2 items) | | | |
|---|---|--------|----------------|
| T-WIWI-102723 | Graph Theory and Advanced Location Models | 4,5 CR | Nickel |
| T-WIWI-106200 | Modeling and OR-Software: Advanced Topics | 4,5 CR | Nickel |
| T-WIWI-102715 | Operations Research in Supply Chain Management | 4,5 CR | Nickel |
| Election block: Supplementary Courses (at most 2 items) | | | |
| T-WIWI-106546 | Introduction to Stochastic Optimization | 4,5 CR | Rebennack |
| T-WIWI-102718 | Discrete-Event Simulation in Production and Logistics | 4,5 CR | Nickel |
| T-WIWI-102719 | Mixed Integer Programming I | 4,5 CR | Stein |
| T-WIWI-102720 | Mixed Integer Programming II | 4,5 CR | Stein |
| T-WIWI-110162 | Optimization Models and Applications | 4,5 CR | Sudermann-Merx |
| T-WIWI-106549 | Large-scale Optimization | 4,5 CR | Rebennack |

Competence Certificate

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

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

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

Competence Goal

The student

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

Prerequisites

There is no compulsory course in the module.

Content

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

This module considers several areas of SCM. On the one hand, the determination of optimal locations within a supply chain is addressed. Strategic decisions concerning the location of facilities as production plants, distribution centers or warehouses are of high importance for the rentability of Supply Chains. Thoroughly carried out, location planning tasks allow an efficient flow of materials and lead to lower costs and increased customer service. On the other hand, the planning of material transport in the context of supply chain management represents another focus of this module. By linking transport connections and different facilities, the material source (production plant) is connected with the material sink (customer). For given material flows or shipments, it is considered how to choose the optimal (in terms of minimal costs) distribution and transportation chain from the set of possible logistics chains, which asserts the compliance of delivery times and further constraints. Furthermore, this module offers the possibility to learn about different aspects of the tactical and operational planning level in Supply Chain Management, including methods of scheduling as well as different approaches in procurement and distribution logistics. Finally, issues of warehousing and inventory management will be discussed.

Recommendation

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

Annotation

Some lectures and courses are offered irregularly.

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

Workload

Total effort for 9 credits: ca. 270 hours

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

M

4.104 Module: Optimization under Uncertainty in Information Engineering and Management [M-WIWI-103243]

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

| Credits | Grading scale | Recurrence | Duration | Level | Version |
|---------|------------------|------------------|----------|-------|---------|
| 5 | Grade to a tenth | Each winter term | 1 term | 4 | 1 |

| Mandatory | | | |
|---------------|--|------|-----------|
| T-WIWI-106545 | Optimization under Uncertainty | 5 CR | Rebennack |

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The exam takes place in every the semester.

Competence Goal

The students are familiar with the modern concepts of stochastic modeling and are in a position to describe and to analyse simple systems in an adequate way.

Prerequisites

None

Content

Markov chains are no longer a nice theory but an important tool in order to model, analyse, and optimize a stochastic system as it evolves over time.

Topics overview: Markov chains, Poisson Processes.

Annotation

New module starting summer term 2017.

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

Workload

See German version.

M

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

Responsible: Prof. Dr. Peter Sanders
Organisation: KIT Department of Informatics
Part of: Informatics

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

| Mandatory | | | |
|---------------|-------------------------------------|------|---------|
| T-INFO-101333 | Parallel Algorithms | 5 CR | Sanders |

M

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

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 3 | Grade to a tenth | Each summer term | 1 term | German | 4 | 1 |

| Mandatory | | | |
|---------------|-------------------------------------|------|---------|
| T-INFO-101362 | Pattern Recognition | 3 CR | Beyerer |

M

4.107 Module: Practical Course: Analysis of Complex Data Sets [M-INFO-102807]

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|---------------|------------|----------|----------|-------|---------|
| 4 | pass/fail | Irregular | 1 term | English | 4 | 1 |

| Mandatory | | | |
|---------------|---|------|------|
| T-INFO-105796 | Practical Course: Analysis of Complex Data Sets | 4 CR | Böhm |

M

4.108 Module: Practical Course: Data Science [M-INFO-105632]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|---------------|------------------|----------|----------|-------|---------|
| 6 | pass/fail | Each summer term | 1 term | German | 4 | 1 |

| Mandatory | | | |
|---------------|--|------|------|
| T-INFO-111262 | Practical Course: Data Science | 6 CR | Böhm |

M

4.109 Module: Practical Course: Database Systems [M-INFO-101662]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|---------------|------------------|----------|----------|-------|---------|
| 4 | pass/fail | Each winter term | 1 term | German | 4 | 1 |

| Mandatory | | | |
|---------------|--|------|------|
| T-INFO-103201 | Practical Course: Database Systems | 4 CR | Böhm |

M

4.110 Module: Practical Course: Geometric Modeling [M-INFO-101666]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 3 | Grade to a tenth | Each winter term | 1 term | German | 4 | 1 |

| Mandatory | | | |
|---------------|--|------|-----------|
| T-INFO-103207 | Practical Course: Geometric Modeling | 3 CR | Prautzsch |

M

4.111 Module: Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data [M-INFO-103128]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|---------------|------------|----------|----------|-------|---------|
| 4 | pass/fail | Irregular | 1 term | English | 4 | 1 |

| Mandatory | | | |
|---------------|---|------|------|
| T-INFO-106219 | Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data | 4 CR | Böhm |

M

4.112 Module: Practical Course: Smart Data Analytics [M-INFO-103235]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 6 | Grade to a tenth | Each summer term | 1 term | German | 4 | 1 |

| Mandatory | | | |
|---------------|--|------|-------|
| T-INFO-106426 | Practical Course: Smart Data Analytics | 6 CR | Beigl |

M

4.113 Module: Private Business Law [M-INFO-101216]

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

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

| Election block: Private Business Law (at least 1 item as well as at least 9 credits) | | | |
|--|-----------------------------------|------|----------|
| T-INFO-101329 | Employment Law I | 3 CR | Hoff |
| T-INFO-101330 | Employment Law II | 3 CR | Hoff |
| T-INFO-101315 | Tax Law I | 3 CR | Dietrich |
| T-INFO-101314 | Tax Law II | 3 CR | Dietrich |
| T-INFO-101316 | Law of Contracts | 3 CR | Hoff |

Competence Goal

The student

- has gained in-depth knowledge of German company law, commercial law and civil law;
- is able to analyze, evaluate and solve complex legal and economic relations and problems;
- is well grounded in individual labour law, collective labour law and commercial constitutional law, evaluates and critically assesses clauses in labour contracts;
- recognizes the significance of the parties to collective labour agreements within the economic system and has differentiated knowledge of labour disputes law and the law governing the supply of temporary workers and of social law;
- possesses detailed knowledge of national earnings and corporate tax law and is able to deal with provisions of tax law in a scientific manner and assesses the effect of these provisions on corporate decision-making.

Prerequisites

None

Content

The module provides the student with knowledge in special matters in business law, like employment law, tax law and business law, which are essential for managerial decisions.

M

4.114 Module: Public Business Law [M-INFO-101217]

Responsible: Dr. Tristan Barczak
Organisation: KIT Department of Informatics
Part of: Law

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

| Election block: Public Business Law (at least 1 item as well as at least 9 credits) | | | |
|---|--|------|-------------|
| T-INFO-101309 | Telecommunications Law | 3 CR | Hermstrüwer |
| T-INFO-101303 | Data Protection Law | 3 CR | Eichenhofer |
| T-INFO-101311 | Public Media Law | 3 CR | Dreier |
| T-INFO-101312 | European and International Law | 3 CR | Brühann |
| T-BGU-111102 | Environmental Law | 3 CR | |

Competence Certificate

see course description.

M

4.115 Module: Randomized Algorithms [M-INFO-100794]

Responsible: Thomas Worsch
Organisation: KIT Department of Informatics
Part of: Informatics

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

| Mandatory | | | |
|---------------|---------------------------------------|------|--------|
| T-INFO-101331 | Randomized Algorithms | 5 CR | Worsch |

M

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

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 6 | Grade to a tenth | Each winter term | 1 term | German | 4 | 3 |

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

M

4.117 Module: Seminar Module Economic Sciences [M-WIWI-102736]

Responsible: Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

Organisation: KIT Department of Economics and Management

Part of: [Research Course](#)

| Credits | Grading scale | Language | Level | Version |
|---------|------------------|----------|-------|---------|
| 3 | Grade to a tenth | German | 4 | 1 |

| Election block: Compulsory Elective Courses (1 item) | | | |
|--|---|------|---|
| T-WIWI-103474 | Seminar in Business Administration A (Master) | 3 CR | Professorenschaft des Fachbereichs Betriebswirtschaftslehre |
| T-WIWI-103478 | Seminar in Economics A (Master) | 3 CR | Professorenschaft des Fachbereichs Volkswirtschaftslehre |
| T-WIWI-103481 | Seminar in Operations Research A (Master) | 3 CR | Nickel, Rebennack, Stein |
| T-WIWI-103483 | Seminar in Statistics A (Master) | 3 CR | Grothe, Schienle |

Competence Certificate

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

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

Competence Goal

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

Prerequisites

None.

Content

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

Annotation

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

Workload

The total workload for this module is approximately 90 hours.

M

4.118 Module: Seminar Module Informatics [M-INFO-102822]

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

Part of: [Research Course](#)

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------------|-------|---------|
| 3 | Grade to a tenth | Each term | 1 term | German/English | 4 | 2 |

| Election block: Compulsory Elective Seminar in Informatics (1 item) | | | |
|---|---|------|---|
| T-INFO-104336 | Seminar Informatics A | 3 CR | Abeck |
| T-WIWI-103480 | Seminar in Informatics B (Master) | 3 CR | Professorenschaft des Fachbereichs Informatik |
| T-INFO-111205 | Seminar Informatics Master | 3 CR | |

M

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

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------|-------|---------|
| 3 | Grade to a tenth | Each term | 1 term | German | 4 | 1 |

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

M

4.120 Module: Seminar: Computer Science TECO [M-INFO-105328]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: Informatics

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

| Mandatory | | | |
|---------------|--------------------------------|------|-------|
| T-INFO-110808 | Seminar: Computer Science TECO | 3 CR | Beigl |

M

4.121 Module: Service Analytics [M-WIWI-101506]

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

Organisation: KIT Department of Economics and Management

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

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

| Election block: Compulsory Elective Courses (9 credits) | | | |
|---|--|--------|-----------------------|
| T-WIWI-108715 | Artificial Intelligence in Service Systems | 4,5 CR | Satzger |
| T-WIWI-111219 | Artificial Intelligence in Service Systems - Applications in Computer Vision | 4,5 CR | Satzger |
| T-WIWI-105777 | Business Intelligence Systems | 4,5 CR | Mädche, Nadj, Toreini |
| T-WIWI-102899 | Modeling and Analyzing Consumer Behavior with R | 4,5 CR | Dorner, Weinhardt |
| T-WIWI-109940 | Special Topics in Information Systems | 4,5 CR | Weinhardt |

Competence Certificate

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

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

Competence Goal

Students

- knows the theoretical bases and the key components of Business Intelligence systems,
- acquires the basic skills to make use of business intelligence and analytics software in the service context
- are introduced into various application scenarios of analytics in the service context
- are able to distinguish different analytics methods and apply them in context
- learn how to apply analytics software in the service context
- are trained for the structured compilation and solution of practice relevant problems with the help of commercial business intelligence software packages as well as analytics methods and tools

Prerequisites

None

Content

The importance of services in modern economies is most evident – nearly 70% of gross value added are achieved in the tertiary sector and a growing number of industrial enterprises add customer specific services to their material goods or transform their business models fundamentally. The growing availability of data “Big Data” and their intelligent processing by applying analytic methods and business intelligence systems plays a key role.

It is the goal of the module to give students a comprehensive overview on the subject Business Intelligence & Analytics focusing on service issues. Various scenarios illustrate how the methods and systems introduced help to improve existing services or create innovative data-based services.

Recommendation

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

Annotation

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

Workload

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

M

4.122 Module: Service Design Thinking [M-WIWI-101503]

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

Organisation: KIT Department of Economics and Management

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

| 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 | Service Design Thinking | 12 CR | Satzger |

Competence Certificate

The assessment is carried out as a general exam (according to Section 4(2), 3 of the examination regulation). The overall grade of the module is the grade of the examination (according to Section 4(2), 3 of the examination regulation).

Competence Goal

- Deep knowledge of the innovation method Design Thinking, as introduced and promoted by Stanford University
- Development of new, creative solutions through extensive observation of oneself and one's environment, in particular with regard to the relevant service users
- Know how to use prototyping and experimentation to visualize one's ideas, to test and iteratively develop them, and to converge on a solution
- Learn to apply the method to a real innovation projects issued by industry partners.

Prerequisites

None

Content

- Paper Bike: Learning about the basic method elements by building a paper bike that has to fulfill a given set of challenges. The bikes will be tested in a race during an international Kick-Off event with other universities of the SUGAR network (intern. Design Thinking network).
- Design Space Exploration: Exploring the problem space through customer and user observation as well as desk research.
- Critical Function Prototype: Identification of critical features from the customer's perspective that can contribute to the solution of the overarching problem. Building and testing prototypes that integrate these functionalities.
- Dark Horse Prototype: Inverting earlier assumptions and experiences, which leads to the inclusion of new features and solutions. Developing radically new ideas are in the focus of this phase.
- Funky Prototype: Integration of the individually tested and successful functions to several complete solution scenarios, which are further tested and developed.
- Functional Prototype: Selection of successful scenarios from the previous phase and building a higher resolution prototype. The final solution to the challenge is laid out in detail and tested with users.
- Final Prototype: Implementing the functional prototype and presenting it to the customer.

Recommendation

This course is held in English – proficiency in writing and communication is required.

Our past students recommend to take this course at the beginning of the masters program.

Annotation

Due to practical project work as a component of the program, access is limited.

The module (as well as the module component) spans two semesters. It starts in September every year and runs until end of June in the subsequent year. Entering the program is only possible at its beginning - after prior application in May/June.

For more information on the application process and the program itself are provided in the module component description and the program's website (<http://sdt-karlsruhe.de>).

Furthermore, the KSRI conducts an information event for applicants every year in May.

This module is part of the KSRI Teaching Program „Digital Service Systems“. For more information see the KSRI Teaching website: www.ksri.kit.edu/teaching.

Workload

The total amount of work for this module is approx. 270 hours (9 credits). The workload for this course is comparably high as the course runs in cooperation with partner universities from around the world as well as partner companies. This causes overhead.

M

4.123 Module: Service Economics and Management [M-WIWI-102754]

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

Organisation: KIT Department of Economics and Management

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

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

| Election block: Compulsory Elective Courses (9 credits) | | | |
|---|--|--------|-----------|
| T-WIWI-110280 | Digital Services: Business Models and Transformation | 4,5 CR | Satzger |
| T-WIWI-102640 | Market Engineering: Information in Institutions | 4,5 CR | Weinhardt |

Competence Certificate

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

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

Competence Goal

Students

- understand the scientific basics of the management of digital services and corresponding systems
- gain a comprehensive insight in the importance and the most important features of information systems as an central component of the digitalization of business processes, products and services
- know the most relevant concepts and theories to shape the digital transformation process of service systems successfully
- understand the OR methods in the sector of service management and apply them adequately
- are able to use large amounts of available data systematically for the planning, operation and improvement of complex service offers and to design and control information systems
- are able to develop market-oriented coordination mechanisms and apply service systems.

Prerequisites

None

Content

This module provides the foundation for the management of digital services and corresponding systems. The courses in this module cover the major concepts for a successful management of service systems and their digital transformation. Current examples from the research and practice enhance the relevance of the discussed topics.

Recommendation

None

Annotation

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

Workload

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

M

4.124 Module: Service Innovation, Design & Engineering [M-WIWI-102806]

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

Organisation: KIT Department of Economics and Management

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

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

| Election block: Compulsory Elective Courses (9 credits) | | | |
|---|--|--------|-----------|
| T-WIWI-110877 | Engineering Interactive Systems | 4,5 CR | |
| T-WIWI-102639 | Business Models in the Internet: Planning and Implementation | 4,5 CR | Weinhardt |
| T-WIWI-110887 | Practical Seminar: Service Innovation | 4,5 CR | Satzger |
| T-WIWI-108437 | Practical Seminar: Information Systems and Service Design | 4,5 CR | Mädche |
| T-WIWI-102641 | Service Innovation | 4,5 CR | Satzger |

Competence Certificate

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

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

Competence Goal

Students

- know about the challenges, concepts, methods and tools of service innovation management and are able to use them successfully.
- have a profound comprehension of the development and design of innovative services and are able to apply suitable methods and tools on concrete and specific issues.
- are able to embed the concepts of innovation management, development and design of services into organisations
- are aware of the strategic importance of services, are able to present value creation in the context of services systems and to strategically exploit the possibilities of their digital transformation
- elaborate concrete and problem-solving solutions for practical tasks in teams.

Prerequisites**Dependencies between courses:**

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

Content

This module is designed to constitute the basis for the development of successful ICT supported innovations thus including the methods and tools for innovation management, for the design and the development of digital services and the implementation of new business models. Current examples from science and practice enhance the relevance of the topics addressed.

Recommendation

Attending the course Practical Seminar Service Innovation [2595477] is recommended in combination with the course Service Innovation [2595468].

Attending the course Practical Seminar Digital Service Design [new] is recommended in combination with the course Digital Service Design [new].

Annotation

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

Workload

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

M

4.125 Module: Service Management [M-WIWI-101448]

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

Organisation: KIT Department of Economics and Management

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

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

| Mandatory | | | |
|---|--|--------|-------------------|
| T-WIWI-110280 | Digital Services: Business Models and Transformation | 4,5 CR | Satzger |
| Election block: Supplementary Courses (4,5 credits) | | | |
| T-WIWI-108715 | Artificial Intelligence in Service Systems | 4,5 CR | Satzger |
| T-WIWI-111219 | Artificial Intelligence in Service Systems - Applications in Computer Vision | 4,5 CR | Satzger |
| T-WIWI-102899 | Modeling and Analyzing Consumer Behavior with R | 4,5 CR | Dorner, Weinhardt |
| T-WIWI-102641 | Service Innovation | 4,5 CR | Satzger |

Competence Certificate

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

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

Competence Goal

The students

- understand the basics of developing and managing IT-based services,
- understand and apply OR methods in service management,
- systematically use vast amounts of available data for planning, operation, personalization and improvement of complex service offerings, and
- understand and analyze innovation processes in corporations.

Prerequisites

The course "Digital Services: Business Models and Transformation" is compulsory and must be examined.

Content

The module service management addresses the basics of developing and managing IT-based services. The lectures contained in this module teach the basics of developing and managing IT-based services and the application of OR methods in the field of service management. Moreover, students learn to systematically analyze vast amounts of data for planning, operation and improvement for complex service offerings. These tools enhance operational and strategic decision support and help to analyze and understand the overall innovation processes in corporations. Current examples from research and industry demonstrate the relevance of the topics discussed in this module.

Recommendation

None

Workload

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

M

4.126 Module: Service Operations [M-WIWI-102805]

Responsible: Prof. Dr. Stefan Nickel

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

| Election block: Compulsory Elective Courses (at most 2 items) | | | |
|---|---|--------|-----------|
| T-WIWI-102718 | Discrete-Event Simulation in Production and Logistics | 4,5 CR | Nickel |
| T-WIWI-102884 | Operations Research in Health Care Management | 4,5 CR | Nickel |
| T-WIWI-102715 | Operations Research in Supply Chain Management | 4,5 CR | Nickel |
| T-WIWI-102716 | Practical Seminar: Health Care Management (with Case Studies) | 4,5 CR | Nickel |
| Election block: Supplementary Courses (at most 2 items) | | | |
| T-WIWI-102872 | Challenges in Supply Chain Management | 4,5 CR | Mohr |
| T-WIWI-110971 | Demand-Driven Supply Chain Planning | 4,5 CR | Packowski |

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO), whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately. The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

Students

- knows the theoretical bases and the key components of Business Intelligence systems,
- acquires the basic skills to make use of business intelligence and analytics software in the service context
- are introduced into various application scenarios of analytics in the service context
- are able to distinguish different analytics methods and apply them in context
- learn how to apply analytics software in the service context
- are trained for the structured compilation and solution of practice relevant problems with the help of commercial business intelligence software packages as well as analytics methods and tools

Prerequisites

There is no compulsory course in the module.

Content

The importance of services in modern economies is most evident – nearly 70% of gross value added are achieved in the tertiary sector and a growing number of industrial enterprises add customer specific services to their material goods or transform their business models fundamentally. The growing availability of data “Big Data” and their intelligent processing by applying analytic methods and business intelligence systems plays a key role.

It is the goal of the module to give students a comprehensive overview on the subject Business Intelligence & Analytics focusing on service issues. Various scenarios illustrate how the methods and systems introduced help to improve existing services or create innovative data-based services.

Recommendation

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

Annotation

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

Workload

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

M

4.127 Module: Software Methods [M-INFO-101202]

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: Informatics

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

| Election block: Software Methods (at least 1 item as well as at least 9 credits) | | | |
|--|---|------|----------|
| T-INFO-101381 | Software Architecture and Quality | 3 CR | Reussner |
| T-INFO-101256 | Software-Evolution | 3 CR | Reussner |
| T-INFO-101278 | Model Driven Software Development | 3 CR | Reussner |
| T-INFO-101300 | Requirements Engineering | 3 CR | Koziolek |

Competence Goal

The students learn the foundations and advanced methods for systematic planning, design, implementation, evaluation and enhancement of software systems. By acquiring knowledge and capabilities to critically evaluate modern technologies, the students are enabled to use these technologies purposefully and effectively. Apart from functional viewpoints and software properties, extra-functional properties such as security and performance are taught. Additionally, an overview of current research topics and challenges are offered.

Prerequisites

None

Content

The content is explained in the course descriptions.

M

4.128 Module: Software Systems [M-INFO-101201]

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: Informatics

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

| Election block: Software Systems (at least 1 item as well as at least 9 credits) | | | |
|--|---|------|----------|
| T-INFO-101381 | Software Architecture and Quality | 3 CR | Reussner |
| T-INFO-101256 | Software-Evolution | 3 CR | Reussner |
| T-INFO-101278 | Model Driven Software Development | 3 CR | Reussner |
| T-INFO-101281 | Formal Systems II: Application | 5 CR | Beckert |
| T-INFO-101378 | Formal Systems II: Theory | 5 CR | Beckert |
| T-INFO-101300 | Requirements Engineering | 3 CR | Koziolek |

Competence Goal

In the courses that comprise this module, students learn different approaches and techniques for systematic and high-quality development of software systems, e.g. requirements engineering, implementing components and services, use of parallelism and multi-core platforms, as well as the verification of created software systems.

Prerequisites

None

Content

The content will be explained in the course descriptions.

M

4.129 Module: Stochastic Optimization [M-WIWI-103289]

Responsible: Prof. Dr. Steffen Rebennack

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Elective Modules in Economics and Management)

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------|----------|----------------|-------|---------|
| 9 | Grade to a tenth | Each term | 1 term | German/English | 4 | 10 |

| Election block: Compulsory Elective Courses (between 1 and 2 items) | | | |
|---|--|--------|----------------|
| T-WIWI-106546 | Introduction to Stochastic Optimization | 4,5 CR | Rebennack |
| T-WIWI-106548 | Advanced Stochastic Optimization | 4,5 CR | Rebennack |
| T-WIWI-106549 | Large-scale Optimization | 4,5 CR | Rebennack |
| Election block: Supplementary Courses (at most 1 item) | | | |
| T-WIWI-102723 | Graph Theory and Advanced Location Models | 4,5 CR | Nickel |
| T-WIWI-102719 | Mixed Integer Programming I | 4,5 CR | Stein |
| T-WIWI-102720 | Mixed Integer Programming II | 4,5 CR | Stein |
| T-WIWI-111247 | Mathematics for High Dimensional Statistics | 4,5 CR | Grothe |
| 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 | 5 CR | Rebennack |
| T-WIWI-110162 | Optimization Models and Applications | 4,5 CR | Sudermann-Merx |

Competence Certificate

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

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

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

Competence Goal

The student

- names and describes basic notions for advanced stochastic optimization methods, in particular, ways to algorithmically exploit the special model structures,
- knows the indispensable methods and models for quantitative analysis of stochastic optimization problems,
- models and classifies stochastic optimization problems and chooses the appropriate solution methods to solve also challenging stochastic optimization problems independently and, if necessary, with the aid of a computer,
- validates, illustrates and interprets the obtained solutions,
- identifies drawbacks of the solution methods and, if necessary, is able to make suggestions to adapt them to practical problems.

Prerequisites

There is no compulsory course in the module.

Content

The module focuses on the modeling as well as the imparting of theoretical principles and solution methods for optimization problems with special structure, which occur for example in the stochastic optimization.

Recommendation

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

Annotation

The course "Introduction to Stochastic Optimization" will be offered until the winter semester 2020/21 as an additional option in the elective offer of the module. Thereafter, the course can only be selected in the supplementary offer.

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

Workload

The total workload for this module is approximately 270 hours (9 credits). The allocation is made according to the credit points of the courses of the module. The total number of hours per course is determined by the amount of time spent attending the lectures and exercises, as well as the exam times and the time required to achieve the module's learning objectives for an average student for an average performance.

M

4.130 Module: Subdivision Algorithms [M-INFO-101864]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics

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

| Mandatory | | | |
|---------------|------------------------|------|-----------|
| T-INFO-103550 | Subdivision Algorithms | 5 CR | Prautzsch |

Prerequisites

None

M

4.131 Module: Telematics [M-INFO-100801]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---------|------------------|------------------|----------|----------|-------|---------|
| 6 | Grade to a tenth | Each winter term | 1 term | German | 4 | 1 |

| Mandatory | | | |
|---------------|------------|------|------------|
| T-INFO-101338 | Telematics | 6 CR | Zitterbart |

M

4.132 Module: Theory and Practice of Data Warehousing and Mining [M-INFO-101256]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Level | Version |
|---------|------------------|------------|----------|-------|---------|
| 9 | Grade to a tenth | Each term | 1 term | 4 | 3 |

| Election block: Practical Course (at most 1 item as well as at most 4 credits) | | | |
|--|---|------|------|
| T-INFO-105796 | Practical Course: Analysis of Complex Data Sets | 4 CR | Böhm |
| T-INFO-106219 | Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data | 4 CR | Böhm |
| T-INFO-103201 | Practical Course: Database Systems | 4 CR | Böhm |
| T-INFO-111262 | Practical Course: Data Science | 6 CR | Böhm |
| Election block: Lecture (at most 5 credits) | | | |
| T-INFO-101305 | Big Data Analytics | 5 CR | Böhm |
| T-INFO-105742 | Big Data Analytics 2 | 3 CR | Böhm |
| T-INFO-101317 | Deployment of Database Systems | 5 CR | Böhm |
| T-INFO-101306 | Datamanagement in the Cloud | 5 CR | Böhm |
| T-INFO-108377 | Data Privacy: From Anonymization to Access Control | 3 CR | Böhm |

Competence Goal

The students

- know the research area of information systems in its various facets and are able to do scientific work in this area,
- are able to explain and to discuss complex aspects of the topics covered by this module with both experts and informed outsiders,
- know the concepts, algorithms, techniques and selected tools in the areas of data warehousing and data mining,
- are familiar with the practical challenges of data analysis and are able to develop respective solutions on their own.

Prerequisites

None

Content

This module aims at exposing students to modern information management, both, in 'breadth' and 'depth'. We achieve 'breadth' by means of a close inspection and comparison of different systems and their respective aims. We achieve 'depth' by means of an extensive examination of the underlying concepts and design alternatives, their assessment as well as by discussing applications. In particular, we look at data warehousing and mining techniques not only from a theoretical point of view but deploy and realise such technologies in a practical course.

Annotation

The courses of this module are offered irregularly. Nonetheless, it is guaranteed that the module can be passed anytime.

M

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

Responsible: Prof. Dr. Kay Mitusch

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Elective Modules in Economics and Management\)](#)

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

| Election block: Compulsory Elective Courses (2 items) | | | |
|---|-------------------------------------|--------|-----------------|
| T-WIWI-103107 | Spatial Economics | 4,5 CR | Ott |
| T-WIWI-100007 | Transport Economics | 4,5 CR | Mitusch, Szimba |

Competence Certificate

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

Competence Goal

The students

- understand the economic issues related to transport and regional development with a main focus on economic policy issues generated by the relationship of transport and regional development with the public sector
- are able to compare different considerations of politics, regulation and the private sector and to analyse and assess the respective decision problems both qualitatively and by applying appropriate methods from economic theory
- are prepared for careers in the public sector, particularly for public companies, politics, regulatory agencies, related consultancies, mayor construction companies or infrastructure project corporations

Prerequisites

None

Content

The development infrastructure (e.g. transport, energy, telecommunications) has always been one of the most relevant factors for economic development and particularly influences the development of the regional economy. From the repertoire of state actions, investments into transport infrastructure are often regarded the most important measure to foster regional economic growth. Besides the direct effects of transport policy on passenger and freight transport, a variety of individual economic activities is significantly dependent on the available or potential transport options. Decisions on the planning, financing and realization of mayor infrastructure projects require a solid and far-reaching consideration of direct and indirect growth effects with the occurring costs.

Through its combination of lectures the module reflects the complex interdependencies between infrastructure policy, transport industry and regional policy and provides its participants with a comprehensive understanding of the functionalities of one of the most important sectors of the economy and its relevance for economic policy.

Annotation

The courses *Assessment of Public Policies and Projects I* (winter term) and *Assessment of Public Policies and Projects II* (summer term) will no longer be part of this module. Student who have already had exams in this courses can integrate these exams in this module.

Workload

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

M

4.134 Module: Ubiquitous Computing [M-INFO-100789]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: Informatics

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

| Mandatory | | | |
|---------------|----------------------|------|-------|
| T-INFO-101326 | Ubiquitous Computing | 5 CR | Beigl |

M

4.135 Module: Ubiquitous Computing [M-WIWI-101458]

Responsible: N.N.
Prof. Dr. Hartmut Schreck

Organisation: KIT Department of Economics and Management

Part of: Informatics

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

| Mandatory | | | |
|---|--|------|----------------|
| T-INFO-101326 | Ubiquitous Computing | 5 CR | Beigl |
| Election block: Supplementary Courses (between 4 and 5 credits) | | | |
| T-WIWI-102761 | Advanced Lab in Ubiquitous Computing | 4 CR | Beigl, Schreck |
| T-INFO-101323 | IT-Security Management for Networked Systems | 5 CR | Hartenstein |

Competence Certificate

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

Competence Goal

The student

- gets comprehensive knowledge about topics in the area of Ubiquitous Computing
- can design and evaluate ubiquitous systems in different application areas
- acquires appropriate knowledge for addressing specialized aspects in the area of ubiquitous computing

Prerequisites

See German version

Content

Ubiquitous information technology (Ubiquitous Computing) addresses the ubiquitous (or pervasive) availability of information processing. The availability of these systems has the objective to facilitate the operational environment in technical scenarios or in daily life of humans and to enrich it with new capabilities. This module provides fundamentals of ubiquitous computing and further topics like network and Internet technologies, security aspects, the analysis of autonomously operating systems in Organic Computing and also the utilisation of information and communication technologies in highly decentralized energy systems.

Workload

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

M

4.136 Module: Wearable Robotic Technologies [M-INFO-103294]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Prof. Dr.-Ing. Michael Beigl

Organisation: KIT Department of Informatics

Part of: [Informatics](#)

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

| Mandatory | | | |
|---------------|---|------|---------------|
| T-INFO-106557 | Wearable Robotic Technologies | 4 CR | Asfour, Beigl |

Competence Goal

The students have received fundamental knowledge about wearable robotic technologies and understand the requirements for the design, the interface to the human body and the control of wearable robots. They are able to describe methods for modelling the human neuromusculoskeletal system, the mechatronic design, fabrication and composition of interfaces to the human body. The students understand the symbiotic human-machine interaction as a core topic of Anthropomatics and have knowledge of state of the art examples of exoskeletons, orthoses and prostheses.

Content

The lecture starts with an overview of wearable robot technologies (exoskeletons, prostheses and orthoses) and its potentials, followed by the basics of wearable robotics. In addition to different approaches to the design of wearable robots and their related actuator and sensor technology, the lecture focuses on modeling the neuromusculoskeletal system of the human body and the physical and cognitive human-robot interaction for tightly coupled hybrid human-robot systems. Examples of current research and various applications of lower, upper and full body exoskeletons as well as prostheses are presented.

M

4.137 Module: Web and Data Science [M-WIWI-105368]

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

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

| Election block: Compulsory Elective Courses (at least 2 items) | | | |
|--|-----------------------------------|--------|---|
| T-WIWI-102666 | Knowledge Discovery | 4,5 CR | Färber |
| T-WIWI-103112 | Web Science | 4,5 CR | Färber |
| T-WIWI-110548 | Advanced Lab Informatics (Master) | 4,5 CR | Professorenschaft des Fachbereichs Informatik |

Competence Certificate

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

Competence Goal

The student

- know the basics of machine learning, data mining and knowledge discovery
- can design, train and evaluate systems that are capable of learning
- carry out knowledge discovery projects, taking into account algorithms, representations and applications.
- will look at current research topics in the field of Web Science and
- learn about the topics Small World Problem, Network Theory, Social Network Analysis, Bibliometrics, Link Analysis and Search,
- apply interdisciplinary thinking and
- apply technological approaches to social science problems.

Prerequisites

None

Content

The module focuses on machine learning and data mining methods for knowledge acquisition from large databases as well as web phenomena and the available technologies.

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

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

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

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

The lecture "Web Science" offers an insight into the analysis of social networks and the metrics used in this context. Thereby especially web phenomena and the available technologies.

Web Science is the emerging study of the people and technologies, applications, processes and practices that make the world Wide Web and are shaped and embossed. Web Science aims to develop theories, methods and findings from the entire academic disciplines and work with industry, business, politics and civil society to create an understanding of the Web: The largest socio-technical infrastructure in the history of mankind.

The lecture gives an introduction to the basic concepts of Web Science. Essential theoretical foundations, Phenomena and methods are presented and explained. This lecture aims to give students a basic knowledge and understanding of the structure and analysis of selected web phenomena and technologies. The topics include the small world problem, Network theory, social network analysis, graph-based search and technologies / standards / architectures.

Workload

The total workload for this module is approximately 270 hours.

M

4.138 Module: Web Data Management [M-WIWI-101455]

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

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

| Election block: Compulsory Elective Courses (2 items) | | | |
|---|-----------------------------------|--------|---|
| T-WIWI-110848 | Semantic Web Technologies | 4,5 CR | Käfer |
| T-WIWI-103112 | Web Science | 4,5 CR | Färber |
| T-WIWI-110548 | Advanced Lab Informatics (Master) | 4,5 CR | Professorenschaft des Fachbereichs Informatik |

Competence Certificate

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

Competence Goal

Students

- develop ontologies for semantic web technologies und choose suitable representation languages,
- are able to provide data and applications via a cloud-based infrastructure
- transfer the methods and technologies of semantic web technologies and cloud computing to new application sectors,
- evaluate the potential of semantic web technologies and the cloud computing approaches for new application sectors.

Content

The module Web Data Management covers the basic principles, methods and applications for intelligent systems in the World Wide Web. Cloud Services are essential for the decentralized, scalable provision of data and applications as well as the methods of semantic web based on the description of data and services via metadata in form of so called ontologies.

Formal principles and practical aspects such as knowledge modeling and available representation language tools for ontologies are covered in detail. Methods for the realization of intelligent systems within the World Wide Web are treated and applications as in Web 2.0 or Service Science are discussed and evaluated.

Furthermore the application of modern Cloud technologies for the use of software and hardware as a service via internet is introduced. Cloud technologies allow the efficient implementation of applications on distributed computer clusters and permit a high scalability as well as new business models in the internet.

Workload

The total workload for this module is approximately 270 hours (9 credits). The allocation is based on the credits of the courses of the module. The workload for courses with 4.5 credits is about 135 hours.

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

M

4.139 Module: Wireless Networking [M-INFO-101203]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: Informatics

| Credits | Grading scale | Recurrence | Duration | Level | Version |
|---------|------------------|------------|----------|-------|---------|
| 8 | Grade to a tenth | Each term | 1 term | 4 | 2 |

| Election block: Wireless Networking (at least 1 item as well as at least 8 credits) | | | |
|---|---|------|-----------------------|
| T-INFO-101337 | Internet of Everything | 4 CR | Zitterbart |
| T-INFO-101322 | Mobile Communication | 4 CR | Waldhorst, Zitterbart |
| T-INFO-101326 | Ubiquitous Computing | 5 CR | Beigl |
| T-INFO-101319 | Network Security: Architectures and Protocols | 4 CR | Zitterbart |

Competence Goal

Each student should be able

- to learn and use the concepts and principals of wireless network design
- to identify the flaws and benefits of wireless communication systems
- to judge the performance of protocols, wireless networks and architectures
- master advanced protocols, architectures and algorithms of wireless communication systems

Content

This module details selected aspects of wireless communication systems. This includes beside the requirements of secure and multimedia-based communication also the realization and controllability of large communication systems and networks. An important aspect is benchmarking and mastering the used algorithms, protocols and architectures. Also actual developments and applications are in the focus of this module.

5 Courses

T

5.1 Course: A Closer Look at Social Innovation [T-WIWI-109932]

Responsible: Dr. Daniela Beyer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Irregular | 1 |

Competence Certificate

Non exam assessment (following §4(2) 3 of the examination regulation). The grade consists of an innovation plan (comparable to an exposé) (15%), a guideline interview (25%), a presentation of the results (20%) and a seminar paper (40%).

Prerequisites

None

Recommendation


The previous attendance of the lecture Innovation Management is recommended.

T

5.2 Course: Access Control Systems: Foundations and Practice [T-INFO-106061]

Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: [M-INFO-101204 - Networking Labs](#)
[M-INFO-101210 - Dynamic IT-Infrastructures](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 5 | Grade to a third | Each term | 2 |

| Events | | | | | |
|---------|---------|--|-------|---|-----------------------------------|
| ST 2021 | 2400111 | Access Control Systems: Foundations and Practice | 3 SWS | Lecture / Practice (/ ) | Hartenstein, Leinweber, Grashöfer |

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

T

5.3 Course: Advanced Empirical Asset Pricing [T-WIWI-110513]

Responsible: Jun.-Prof. Dr. Julian Thimme
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

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

| Events | | | | | |
|----------|---------|---|--------|------------|--------|
| WT 20/21 | 2530601 | Advanced Empirical Asset Pricing | 2 SWS | Lecture / | Thimme |
| WT 20/21 | 2530602 | Übung zu Advanced Empirical Asset Pricing | 1 SWS | Practice / | Thimme |
| Exams | | | | | |
| WT 20/21 | 7900319 | Advanced Empirical Asset Pricing | Thimme | | |

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

Competence Certificate

The success control takes place in form of a written examination (60 min) during the semester break (according to §4(2), 1 SPO). If the number of participants is low, an oral examination (according to §4 (2), 2 SPO) may also be offered. The examination is offered every semester and can be repeated at any regular examination date.

A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Recommendation

We strongly recommend knowledge of the basic topics in investments (bachelor course), which will be necessary to be able to follow the course. In addition, prior participation in the Asset Pricing Master course is strongly recommended.

Annotation

New course from winter semester 2019/2020.

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

V

Advanced Empirical Asset Pricing

2530601, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

In this course we will discuss the fundamentals of Asset Pricing and how to test them. Although this is an Empirical Asset Pricing course, we deal with some concepts from Asset Pricing Theory that we can test afterwards (CAPM, ICAPM, CCAPM, recursive utility). Besides, the course will cover the most important empirical methods to do so. For that purpose, we will discuss the overarching tool *Generalized Method of Moments*, and the special cases of OLS and FMB regressions. Every second week, we will meet for a programming session, in which we will look at the data to draw our own conclusions. An introduction to the software MATLAB will be given at the beginning of the course. Students should bring a laptop to these sessions. Programming skills are not required but helpful.

We start with a review of the Stochastic Discount Factor, which is already known from the course „Asset Pricing“. We then derive the CAPM and the Consumption-CAPM as special cases from the general consumption-savings optimization problem of the rational investor. In the first part of the course we discuss the CAPM and, as natural extensions, models with multiple factors. Prominent phenomena such as the value premium and momentum are discussed. In the second part of the lecture we will study extensions of Consumption-CAPM and study the implications of exotic preferences.

Literature

Basisliteratur

Asset pricing / Cochrane, J.H. - Rev. ed., Princeton Univ. Press, 2005.

zur Vertiefung/ Wiederholung

Investments and Portfolio Management / Bodie, Z., Kane, A., Marcus, A.J. - 9. ed., McGraw-Hill, 2011.

The econometrics of financial markets / Campbell, J.Y., Lo, A.W., MacKinlay, A.C. - 2. printing, with corrections, Princeton Univ. Press, 1997.

T



5.4 Course: Advanced Game Theory [T-WIWI-102861]





Responsible: Prof. Dr. Karl-Martin Ehrhart
Prof. Dr. Clemens Puppe
Prof. Dr. Johannes Philipp Reiß

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-101500 - Microeconomic Theory](#)
[M-WIWI-101502 - Economic Theory and its Application in Finance](#)

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

| Events | | | | | |
|----------|---------|---|-------|--|-------|
| WT 20/21 | 2521533 | Advanced Game Theory | 2 SWS | Lecture /  | Puppe |
| WT 20/21 | 2521534 | Übung zu Advanced Game Theory | 1 SWS | Practice /  | Puppe |
| Exams | | | | | |
| WT 20/21 | 7900351 | Advanced Game Theory | | | Puppe |

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

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

Basic knowledge of mathematics and statistics is assumed.

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

V

Advanced Game Theory

2521533, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

T

5.5 Course: Advanced Information Systems [T-WIWI-110373]

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

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101443 - Information Engineering and Management](#)

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

| Exams | | | |
|----------|---------|--|-----------|
| WT 20/21 | 7900195 | Advanced Information Systems | Weinhardt |
| WT 20/21 | 7900231 | Advanced Information Systems | Weinhardt |

Competence Certificate

Please note that the lecture will no longer be offered as of summer semester 2020. The last opportunity to take an examination is in the winter semester 2020/2021.

The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulation).

Recommendation

None

Annotation

The course starts with a short summary of Information Systems I and II. The course is held in English.

T

5.6 Course: Advanced Lab in Ubiquitous Computing [T-WIWI-102761]

Responsible: Prof. Dr.-Ing. Michael Beigl
Prof. Dr. Hartmut Schmeck

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101458 - Ubiquitous Computing](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 4 | Grade to a third | Irregular | 1 |

Competence Certificate

See German version

Prerequisites

None

Annotation

See German Version

T

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

Responsible: Professorenschaft des Fachbereichs Informatik
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101455 - Web Data Management
M-WIWI-101456 - Intelligent Systems and Services
M-WIWI-101477 - Development of Business Information Systems
M-WIWI-105366 - Artificial Intelligence
M-WIWI-105368 - Web and Data Science

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

| Events | | | | | |
|----------|---------|---|-------|----------------------|--|
| WT 20/21 | 2512205 | Lab Realisation of innovative services (Master) | 3 SWS | Practical course / 📱 | Oberweis, Schiefer, Schüler, Toussaint |
| WT 20/21 | 2512403 | Practical Course Blockchain Hackathon (Master) | | Practical course / 🔄 | Sunyaev, Kannengießer, Sturm |
| WT 20/21 | 2512501 | Practical Course Cognitive Automobiles and Robots (Master) | 3 SWS | Practical course / 📱 | Zöllner |
| WT 20/21 | 2512600 | Project lab Information Service Engineering (Master) | 2 SWS | Practical course / 🔄 | Sack |
| WT 20/21 | 2513312 | Seminar Linked Data and the Semantic Web (Bachelor) | 2 SWS | Seminar / 📱 | Färber, Käfer, Heling, Bartscherer |
| WT 20/21 | 2513313 | Seminar Linked Data and the Semantic Web (Master) | 2 SWS | Seminar / 📱 | Färber, Käfer, Heling, Bartscherer |
| ST 2021 | 2512205 | Lab Realisation of innovative services (Master) | 3 SWS | Practical course / 🔄 | Oberweis, Schiefer, Schüler, Toussaint |
| ST 2021 | 2512207 | Lab Automation in Everyday Life (Master) | 3 SWS | Practical course / 📱 | Oberweis, Forell, Frister |
| ST 2021 | 2512401 | Development of Sociotechnical Information Systems (Master) | 3 SWS | Practical course / 📱 | Sunyaev, Pandl |
| ST 2021 | 2512403 | Advanced Lab Blockchain Hackathon (Master) | | Practical course / 📱 | Sunyaev, Beyene, Kannengießer |
| ST 2021 | 2512500 | Project Lab Machine Learning | 3 SWS | Practical course / 🔄 | Zöllner |
| ST 2021 | 2512555 | Practical lab Security, Usability and Society (Master) | 3 SWS | Practical course / 📱 | Strufe, Mayer, Arias Cabarcos, Berens, Mossano, Düzgün, Beckmann |
| Exams | | | | | |
| WT 20/21 | 7900046 | Advanced Lab Security (Master) | | | Volkamer |
| WT 20/21 | 7900102 | Advanced Lab Information Service Engineering (Master) | | | Sack |
| WT 20/21 | 7900107 | Advanced Lab Cognitive Automobile and Robots (Master) | | | Zöllner |
| WT 20/21 | 7900138 | Advanced Lab Security, Usability and Society (Master) | | | Volkamer |
| WT 20/21 | 7900141 | Advanced Lab Blockchain Hackathon (Master) | | | Sunyaev |
| WT 20/21 | 7900156 | Advanced Lab Implementation of Innovative Services (Master) | | | Oberweis |
| ST 2021 | 7900020 | Lab Automation in Everyday Life (Master) | | | Oberweis |
| ST 2021 | 7900086 | Project Lab Machine Learning | | | Zöllner |
| ST 2021 | 7900148 | Advanced Lab Realization of innovative services (Master) | | | Oberweis |
| ST 2021 | 7900172 | Lab Blockchain Hackathon (Master) | | | Sunyaev |
| ST 2021 | 7900173 | Advanced Lab Development of Sociotechnical Information Systems (Master) | | | Sunyaev |
| ST 2021 | 7900178 | Practical lab Security, Usability and Society (Master) | | | Volkamer |

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

Competence Certificate

The alternative exam assessment consists of:

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

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


Prerequisites

None

Annotation

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

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

| | | |
|---|--|--|
|  | Lab Realisation of innovative services (Master) 2512205, WS 20/21, 3 SWS, Language: German, Open in study portal | Practical course (P) Online |
|---|--|--|


Content

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

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

Organizational issues

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

| | | |
|---|---|--|
|  | Practical Course Cognitive Automobiles and Robots (Master) 2512501, WS 20/21, 3 SWS, Language: German/English, Open in study portal | Practical course (P) Online |
|---|---|--|

Content

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

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

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

Learning objectives:

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

Recommendations:

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


Workload:

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

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

| | | |
|---|--|--|
|  | Project lab Information Service Engineering (Master) 2512600, WS 20/21, 2 SWS, Language: English, Open in study portal | Practical course (P) Blended (On-Site/Online) |
|---|--|--|

Content

The **ISE project course** is based on the summer semester lecture "**Information Service Engineering**". The topics of the ISE project course focus on artificial intelligence based applications. In particular, we are covering the following:

- Natural Language Processing
- Knowledge Graphs
- Deep Learning

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

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

Required coursework includes:

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

Notes:

The ISEproject course can also be credited as a **seminar**.

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

The project course will be restricted to 15 participants.

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

ISE Tutor Team:

- Dr. Mehwish Alam
- Dr. Danilo Dessi
- M. Sc. Genet Asefa Gesese
- M. Sc. Fabian Hoppe
- M. Sc. Zahra Rezaie
- M. Sc. Sasha Vsesviatska
- B. Sc. Tabea Tietz

Organizational issues

Projektpraktikum Information Service Engineering can also be credited as a **seminar**.

**Seminar Linked Data and the Semantic Web (Bachelor)**

2513312, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)
Online**

Content

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

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


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

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

Topics of interest include, but are not limited to:

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

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

| | | |
|--|--|-------------------------------|
|  | Seminar Linked Data and the Semantic Web (Master) 2513313, WS 20/21, 2 SWS, Language: German/English, Open in study portal | Seminar (S) Online |
|--|--|-------------------------------|

Content

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

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


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

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

Topics of interest include, but are not limited to:

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

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

| | | |
|---|---|--|
|  | Lab Realisation of innovative services (Master) 2512205, SS 2021, 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).

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

Organizational issues

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

**Lab Automation in Everyday Life (Master)**

2512207, SS 2021, 3 SWS, Language: German, [Open in study portal](#)

Practical course (P)
Online

Content

As part of the lab, various topics on everyday automation are offered. During the lab, the participants will gain an insight into problem-solving oriented project work and work on a project together in small groups.

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

Organizational issues

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

**Development of Sociotechnical Information Systems (Master)**

2512401, SS 2021, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)
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.

**Project Lab Machine Learning**

2512500, SS 2021, 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 4.5 credit points consists of the time spent in the lab for practical implementation of the selected solution, as well as the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

**Practical lab Security, Usability and Society (Master)**

2512555, SS 2021, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)
Online

Content

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

WiWi link: <https://portal.wiwi.kit.edu/ys/4629>

Important dates:

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

Report + code submission : 07.09.2021, 23:59 CET

Presentation deadline : 20.09.2021, 23:59 CET

Presentation day: 24.09.2021, 09:00 CET

Topics:

Privacy Friendly apps

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

- Notes 2.0

Programming Usable Security Intervention

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

- Password Manager Enrolment Add-On
- Portfolio Graphical Recognition-Based Passwords with Gamepads
- Visualization app to explore Facebook behavioral data collection
- Authenticating on AR glasses: Implementing an authentication scheme for the Google Glass

Designing Security User studies (online studies only)

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

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

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




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





T

5.8 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-104520 - Human Factors in Security and Privacy

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|----------|---------|---|-------|--|---|
| WT 20/21 | 2512554 | Practical Course Security, Usability and Society (Bachelor) | 3 SWS | Practical course /  | Volkamer, Strufe, Mayer, Arias Cabarcos, Aldag, Berens, Düzgün, Mossano, Beckmann |
| WT 20/21 | 2512555 | Practical Course Security, Usability and Society (Master) | 3 SWS | Practical course /  | Volkamer, Strufe, Mayer, Arias Cabarcos, Aldag, Berens, Düzgün, Mossano, Beckmann |
| ST 2021 | 2612554 | Practical lab Security, Usability and Society (Bachelor) | 3 SWS | Practical course /  | Strufe, Mayer, Arias Cabarcos, Berens, Mossano, Beckmann |
| Exams | | | | | |
| WT 20/21 | 7900116 | Advanced Lab Security, Usability and Society (Bachelor) | | | Volkamer |
| WT 20/21 | 7900138 | Advanced Lab Security, Usability and Society (Master) | | | Volkamer |
| ST 2021 | 7900029 | Practical lab Security, Usability and Society (Bachelor) | | | Volkamer |

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

Competence Certificate

The alternative exam assessment consists of:

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

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

Prerequisites

None

Recommendation

Knowledge from the lecture "Information Security" is recommended.

Annotation

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

Contents:

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

Learning goals:

The student

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

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



Practical Course Security, Usability and Society (Bachelor)

2512554, WS 20/21, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)
Online

Content

The internship "Security, Usability, and Society" covers topics such as user-friendly security and data protection programs as well as the implementation of user studies. The kick-off and the final presentations will be in English. The language of communication with the supervisor can - depending on the topic / supervisor - be German.

Important dates:

Kick-off: (mandatory) 3.11.2020, 10:00-11:30, online. Link: [Microsoft Teams](#)

Final submission: 14.03.2021, 23:59

Presentation: March 14, 2021

Topics:

Privacy-friendly apps

In this topic area, students complete an app (or an extension of an app) among our Privacy-Friendly Apps (PFA). 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.

- NoPhish 2.0
- Notes 2.0

Programming usable security measures

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. Some examples are TORPEDO (<https://secuso.aifb.kit.edu/english/TORPEDO.php>) or PassSec + (<https://secuso.aifb.kit.edu/english/PassSecPlus.php>). Just as for PFA, students are provided with a point list of goals, containing both basic features mandatory to pass the course and more advanced ones that heighten the final grade.

- Password Manager Enrolment Add-On
- Visualization app to explore Facebook behavioral data collection
- Portfolio Graphical Recognition-Based Passwords with Gamepads
- Implementation of an anti-phishing browser extension (English only)

Usable security user studies (online studies only)

These topics relate to setting up or analysing the results of user studies of various kinds. This year, due to the Corona outbreak, we decided to only run online studies. Otherwise interviews and laboratory tests would have been possible. At the end of the semester, the students present a report / work and a lecture in which they present their results.

- Investigating user reaction to password data breaches
- Expert feedback for an anti-phishing webpage template (English only)

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

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



Practical Course Security, Usability and Society (Master)

2512555, WS 20/21, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)
Online

Content

The internship "Security, Usability, and Society" covers topics such as user-friendly security and data protection programs as well as the implementation of user studies. The kick-off and the final presentations will be in English. The language of communication with the supervisor can - depending on the topic / supervisor - be German.

Important dates:

Kick-off: (mandatory) 3.11.2020, 10:00-11:30, online. Link: [Microsoft Teams](#)

Final submission: 14.03.2021, 23:59

Presentation: March 14, 2021

Topics:

Privacy-friendly apps

In this topic area, students complete an app (or an extension of an app) among our Privacy-Friendly Apps (PFA). 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.

- NoPhish 2.0
- Notes 2.0

Programming usable security measures

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. Some examples are TORPEDO (<https://secuso.aifb.kit.edu/english/TORPEDO.php>) or PassSec + (<https://secuso.aifb.kit.edu/english/PassSecPlus.php>). Just as for PFA, students are provided with a point list of goals, containing both basic features mandatory to pass the course and more advanced ones that heighten the final grade.

- Password Manager Enrolment Add-On
- Visualization app to explore Facebook behavioral data collection
- Portfolio Graphical Recognition-Based Passwords with Gamepads
- Implementation of an anti-phishing browser extension (English only)

Execution of usable security user studies (online studies only)

These topics relate to setting up or analysing the results of user studies of various kinds. This year, due to the Corona outbreak, we decided to only run online studies. Otherwise interviews and laboratory tests would have been possible. At the end of the semester, the students present a report / work and a lecture in which they present their results.

- Investigating user reaction to password data breaches
- Expert feedback for an anti-phishing webpage template (English only)
- Implementing Zero-Trust Authentication Schemes

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

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

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

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

**Practical course (P)
Online**

Content

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

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

Important dates:

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

Report + code submission : 07.09.2021, 23:59 CET

Presentation deadline : 20.09.2021, 23:59 CET

Presentation day: 24.09.2021, 09:00 CET

Topics:

Privacy Friendly apps

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

- Notes 2.0

Programming Usable Security Intervention

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

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

Designing Security User studies (online studies only)

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

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

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

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

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5.9 Course: Advanced Machine Learning [T-WIWI-109921]





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

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101470 - Data Science: Advanced CRM](#)
[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 2021 | 2540535 | Advanced Machine Learning | 2 SWS | Lecture /  | Nazemi |
| ST 2021 | 2540536 | Exercise Advanced Machine Learning | 1 SWS | Practice /  | Nazemi |
| Exams | | | | | |
| WT 20/21 | 7900253 | Advanced Machine Learning (Nachklausur 2020) | | | 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

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

V

Advanced Machine Learning

2540535, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

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

5.10 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](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 9 | Grade to a third | Each term | 1 |

| Events | | | | | |
|---------|---------|--|-------|--|--------|
| ST 2021 | 2530357 | Advanced Machine Learning and Data Science | 4 SWS | Practical course /  | 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".

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.

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

V

Advanced Machine Learning and Data Science
 2530357, SS 2021, 4 SWS, Language: English, [Open in study portal](#)

**Practical course (P)
 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

14-tägig, tba

Literature


Literatur wird in der ersten Vorlesung bekannt gegeben.



T

5.11 Course: Advanced Management Accounting [T-WIWI-102885]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101510 - Cross-Functional Management Accounting](#)

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

| Events | | | | | |
|----------|--------------|--|-------|---|---------------|
| WT 20/21 | 2579907 | Advanced Management Accounting | 4 SWS | Lecture / Practice (/ ) | Wouters, Riar |
| Exams | | | | | |
| WT 20/21 | 79-2579907-M | Advanced Management Accounting | | | Wouters |

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

Competence Certificate

The assessment consists of an oral exam (30 min) (according to §4 (2), 2 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None.

Recommendation

The course requires significant prior knowledge of Management Accounting, similar to the content of the courses MA 1 and 2, although completion of these particular courses is not a formal requirement.

Annotation

This course is held in English. Lectures and tutorials are integrated.

The course is compulsory and must be examined.

Students who are interested in attending this course should send an e-mail to Professor Wouters (marc.wouters@kit.edu).

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

V

Advanced Management Accounting

2579907, WS 20/21, 4 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)
On-Site

Content

This course is held in English. Students who are interested in attending this course should send an e-mail to Professor Wouters (marc.wouters@kit.edu).

Inhalt:

- The course addresses several topics where management accounting is strongly related to marketing, finance, or organization and strategy, such as customer value propositions, financial performance measures, managing new product development, and technology investment decisions.

Learning objectives:

- Students will be able to consider advanced management accounting methods in an interdisciplinary way and to apply these to managerial decision-making problems in operations and innovation.
- They will also be able to identify relevant research results on such methods.

Examination:

- The assessment consists of an oral exam (30 min) taking place in the recess period (according to § 4 (2) No. 2 of the examination regulation).
- The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Required prior Courses:

- The course is compulsory and must be examined.

Recommendations:

- The course requires significant prior knowledge of Management Accounting, similar to the content of the courses MA 1 and 2, although completion of these particular courses is not a formal requirement.

Workload:

- The total workload for this course is approximately 135 hours. For further information see German version.

Literature

Literature is mostly made available via ILIAS.

T

5.12 Course: Advanced Management Accounting 2 [T-WIWI-110179]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101510 - Cross-Functional Management Accounting](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|-----------------|---------|
| Oral examination | 4,5 | Grade to a third | see Annotations | 1 |

Competence Certificate

The examination will no longer be offered as of summer semester 2021.

Prerequisites

None.

Recommendation

The course requires significant prior knowledge of Management Accounting, similar to the content of the courses MA 1 and 2, although completion of these particular courses is not a formal requirement.

Annotation

Lecture and examination will no longer be offered from summer semester 2021.

**5.13 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](#)

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

| Events | | | | | |
|----------|-------------|---|-------|------------|----------------|
| WT 20/21 | 2550552 | Statistik für Fortgeschrittene | 2 SWS | Lecture / | Grothe, Kaplan |
| WT 20/21 | 2550553 | Übung zu Statistik für Fortgeschrittene | 2 SWS | Practice / | Grothe, Kaplan |
| Exams | | | | | |
| WT 20/21 | 7900304_VOP | Advanced Statistics | | | Grothe |
| WT 20/21 | 7900367 | Advanced Statistics | | | Grothe |

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

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation. A bonus program can improve the grade by one grade level (i.e. by 0.3 or 0.4). The exam is offered every semester. Re-examinations are offered only for repeaters.

Prerequisites

None

Annotation

New course starting winter term 2015/2016

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

**Statistik für Fortgeschrittene**

2550552, WS 20/21, 2 SWS, [Open in study portal](#)

Lecture (V)
Online

Literature

Skript zur Vorlesung

T

5.14 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 |
|---------------------|---------|------------------|------------|---------|
| Written examination | 4,5 | Grade to a third | Irregular | 1 |

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The exam takes place in every the semester.

Prerequisites



None.

T

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

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101406 - Network Economics](#)
[M-WIWI-101500 - Microeconomic Theory](#)
[M-WIWI-101502 - Economic Theory and its Application in Finance](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 4,5 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|---------|---------|---|-------|--|----------------|
| ST 2021 | 2520527 | Advanced Topics in Economic Theory | 2 SWS | Lecture /  | Mitusch, Brumm |
| ST 2021 | 2520528 | Übung zu Advanced Topics in Economic Theory | 1 SWS | Practice /  | Pegorari |

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

Competence Certificate

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

Prerequisites

None

Recommendation

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

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

V

Advanced Topics in Economic Theory

2520527, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Literature

Die Veranstaltung wird in englischer Sprache angeboten:

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

T


5.16 Course: Algorithm Engineering [T-INFO-101332]

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

Organisation: KIT Department of Informatics

Part of: [M-INFO-100795 - Algorithm Engineering](#)
[M-INFO-101199 - Advanced Algorithms: Design and Analysis](#)
[M-INFO-101200 - Advanced Algorithms: Engineering and Applications](#)

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

| Events | | | | | |
|----------|---------|---------------------------------------|---------|---|-------------------------|
| ST 2021 | 2400051 | Algorithm Engineering | 2/1 SWS | Lecture /  | Sanders, Witt, Seemaier |
| Exams | | | | | |
| WT 20/21 | 75514 | Algorithm Engineering | | | Sanders |

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

T

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

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [M-INFO-101199 - Advanced Algorithms: Design and Analysis](#)
[M-INFO-101200 - Advanced Algorithms: Engineering and Applications](#)
[M-INFO-101237 - Algorithmic Methods for Hard Optimization Problems](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------|---------|
| Oral examination | 5 | Grade to a third | Irregular | 1 |

T


5.18 Course: Algorithmic Methods for Network Analysis [T-INFO-104759]





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

Organisation: KIT Department of Informatics

Part of: [M-INFO-102400 - Algorithmic Methods for Network Analysis](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------|---------|
| Oral examination | 5 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|---------|---------|--|------------|---|------------------|
| ST 2021 | 2400018 | Algorithmic Methods for Network Analysis | 2+1 SWS | Lecture / Practice (/ ) | Ueckerdt, Hamann |

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

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

V

Algorithmic Methods for Network Analysis

2400018, SS 2021, 2+1 SWS, Language: German, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

Content

150 h

Literature

Brandes, Erlebach: Network Analysis - Methodological Foundations. Springer, 2005.


Newman: Networks. An Introduction. Oxford University Press, 2010.





T

5.19 Course: Algorithms for Routing [T-INFO-100002]

Responsible: Prof. Dr. Dorothea Wagner**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100031 - Algorithms for Routing](#)[M-INFO-101199 - Advanced Algorithms: Design and Analysis](#)[M-INFO-101200 - Advanced Algorithms: Engineering and Applications](#)

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

| Events | | | | | |
|---------|---------|---|-------|---|----------------------------------|
| ST 2021 | 2424638 | Algorithmen für Routenplanung (mit Übungen) | 3 SWS | Lecture / Practice (/ ) | Buchhold, Zeitz, Sauer, Ueckerdt |

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


T

5.20 Course: Algorithms for Visualization of Graphs [T-INFO-104390]

Responsible: Prof. Dr. Dorothea Wagner**Organisation:** KIT Department of Informatics

Part of: [M-INFO-101199 - Advanced Algorithms: Design and Analysis](#)
[M-INFO-101200 - Advanced Algorithms: Engineering and Applications](#)
[M-INFO-102094 - Algorithms for Visualization of Graphs](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------|---------|
| Oral examination | 5 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|----------|---------|--|---------|---|---------------------|
| WT 20/21 | 24118 | Algorithmen zur Visualisierung von Graphen | 2+1 SWS | Lecture / Practice (/ ) | Ueckerdt, Jungeblut |
| Exams | | | | | |
| WT 20/21 | 7500046 | Algorithms for Visualization of Graphs | | | Ueckerdt |

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

T


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





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

Organisation: KIT Department of Informatics

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

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

| Events | | | | | |
|----------|---------|-------------------------------|-------|---|--------------------------|
| WT 20/21 | 24079 | Algorithms II | 4 SWS | Lecture /  | Sanders, Heuer, Seemaier |
| Exams | | | | | |
| WT 20/21 | 7500245 | Algorithms II | | | Sanders |
| ST 2021 | 7500464 | Algorithms II | | | Sanders |


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

T

5.22 Course: Algorithms in Cellular Automata [T-INFO-101334]

Responsible: Thomas Worsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-100797 - Algorithms in Cellular Automata](#)
[M-INFO-101199 - Advanced Algorithms: Design and Analysis](#)

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

| Events | | | | | |
|----------|----------|--|-------|---|-----------------|
| ST 2021 | 24622 | Algorithms for Cellular Automata | 3 SWS | Lecture /  | Worsch, Vollmar |
| Exams | | | | | |
| WT 20/21 | 75400001 | Algorithms in Cellular Automata | | | Worsch |


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




T

5.23 Course: Analyzing and Evaluating Innovation Processes [T-WIWI-108774]

Responsible: Dr. Daniela Beyer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

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

| Events | | | | | |
|---------|---------|--|-------|---|-------|
| ST 2021 | 2545108 | Innovationsprozesse analysieren & evaluieren | 2 SWS | Seminar /  | Beyer |

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

Competence Certificate

Non exam assessment (following §4(2) 3 of the examination regulation).

Innovation plan (exposé) (20%), Guided interviews/ quantitative survey (20%), presentation of results (20%), seminar paper (about 5 pages per person) (40%).

Prerequisites

None

Recommendation

Prior attendance of the course Innovation Management is recommended.

T

5.24 Course: Applied Econometrics [T-WIWI-103125]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101638 - Econometrics and Statistics I](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 4,5 | Grade to a third | Irregular | 1 |

| Exams | | | |
|----------|---------|--------------------------------------|--------|
| WT 20/21 | 7900251 | Applied Econometrics | Krüger |
| WT 20/21 | 7900280 | Applied Econometrics | Krüger |

Competence Certificate

The assessment of this course is a written examination (90 min) according to §4(2), 1 of the examination regulation.

Prerequisites

None

Annotation


The course is not offered regularly.





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5.25 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 20/21 | 2595650 | Artificial Intelligence in Service Systems | 2 SWS | Lecture /  | Kühl, Vössing |
| Exams | | | | | |
| WT 20/21 | 7900303 | Artificial Intelligence in Service Systems (17.03.2021) | | | 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

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

V

Artificial Intelligence in Service Systems

2595650, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

Artificial Intelligence (AI) and the application of machine learning is becoming more and more popular to solve relevant business challenges. However, it is not only important to be familiar with precise algorithms, but rather a general understanding of the necessary steps with a holistic view—from real-world challenge to successful deployment of an AI-based solution. As part of this course, we teach the complete lifecycle of an AI project with a focus on supervised machine learning challenges. We do so by also teaching the use of Python and the required packages like scikit-learn and tensorflow with exemplary data. We then take this knowledge to the more complex case of service systems with different entities (e.g., companies) who interact with each other and show possibilities on how to derive holistic insights. Two possibilities to do so are the use of meta and transfer machine learning, where we teach insights in their theory, design and application.

Students of this course will be able to understand and implement the complete lifecycle of a typical Artificial Intelligence use case with supervised machine learning. Furthermore, they understand the importance and the means of applying AI and Machine Learning within service systems, which allows multiple, independent entities to collaborate and derive insights. Students will be proficient with typical Python code for AI challenges.

Literature

- Baier, Lucas, Niklas Kühl, and Gerhard Satzger. "How to Cope with Change?-Preserving Validity of Predictive Services over Time." Proceedings of the 52nd Hawaii International Conference on System Sciences. 2019.
- Cawley, Gavin C., and Nicola LC Talbot. "On over-fitting in model selection and subsequent selection bias in performance evaluation." Journal of Machine Learning Research 11.Jul (2010): 2079-2107.
- Fromm, Hansjörg, Francois Habryn, and Gerhard Satzger, "Service analytics: Leveraging data across enterprise boundaries for competitive advantage," in Globalization of Professional Services, 2012, pp. 139–149.
- Gama, J, I. Žliobaitė, A. Bifet, M. Pechenizkiy, and A. Bouchachia, "A survey on concept drift adaptation," ACM Comput. Surv., vol. 46, no. 4, pp. 1–37, 2014.
- Hirt, Robin, Niklas Kühl, and Gerhard Satzger. "An end-to-end process model for supervised machine learning classification: from problem to deployment in information systems." Designing the Digital Transformation: DESRIST 2017 Research in Progress Proceedings of the 12th International Conference on Design Science Research in Information Systems and Technology. Karlsruhe, Germany. 30 May-1 Jun. Karlsruher Institut für Technologie (KIT), 2017.
- Hirt, Robin, and Niklas Kühl. "Cognition in the Era of Smart Service Systems: Inter-organizational Analytics through Meta and Transfer Learning." (2018).
- Hirt, Robin, Niklas Kühl, and Gerhard Satzger. "Cognitive computing for customer profiling: meta classification for gender prediction." Electronic Markets 29.1 (2019): 93-106.
- Kühl, N., Goutier, M., Hirt, R., & Satzger, G. (2019, January). Machine learning in artificial intelligence: Towards a common understanding. In Proceedings of the 52nd Hawaii International Conference on System Sciences.
- Kühl, Niklas, Marius Mühlthaler, and Marc Goutier. "Supporting customer-oriented marketing with artificial intelligence: automatically quantifying customer needs from social media." Electronic Markets (2019): 1-17
- Martin, Dominik, Robin Hirt, and Niklas Kühl. "Service Systems, Smart Service Systems and Cyber-Physical Systems— What's the difference? Towards a Unified Terminology." (2019).
- Müller, Vincent C., and Nick Bostrom. "Future progress in artificial intelligence: A survey of expert opinion." Fundamental issues of artificial intelligence. Springer, Cham, 2016. 555-572.
- Pan, Sinno Jialin, and Qiang Yang. "A survey on transfer learning." IEEE Transactions on knowledge and data engineering 22.10 (2009): 1345-1359.

T


5.26 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-101470 - Data Science: Advanced CRM](#)
[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 2021 | 2595501 | Artificial Intelligence in Service Systems - Applications in Computer Vision | 2 SWS | Lecture /  | Satzger, Schmitz |

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

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

Lecture (V)
Online

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.

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

Due to the practical group sessions in the course, the number of participants is limited. The official application period in the WiWi portal is over. However, there is a limited number of remaining spaces. In case you are motivated to participate and have previous experience in the fields of Python Programming and Machine Learning please send a mail to jannis.walk@kit.edu until Friday, 9th of April 2021.

Your mail has to contain:

- A short letter of motivation, ideally (but not necessarily) with reference to previous experience in programming and data science (maximum one page)
- Transcript of records (for Bachelor and Master if available)

Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

Literature

- Friedman, Jerome, Trevor Hastie, and Robert Tibshirani. *The elements of statistical learning*. Vol. 1. No. 10. New York: Springer series in statistics, 2001.
- Russell, S., & Norvig, P. (2002). *Artificial intelligence: a modern approach*.
- Goldstein, E. B. (2009). *Sensation and perception*. 8th. Belmont: Wadsworth, Cengage Learning, 496(3).
- Gonzalez, Rafael C., Woods, Richard E. (2018). *Digital Image Processing*. 4th Pearson India
- Szeliski, R. (2010). *Computer vision: algorithms and applications*. Springer Science & Business Media.
- Redmon, J., Divvala, S., Girshick, R., & Farhadi, A. (2016). You only look once: Unified, real-time object detection. In *Proceedings of the IEEE conference on computer vision and pattern recognition*(pp. 779-788).
- Sermanet, P., Chintala, S., & LeCun, Y. (2012, November). Convolutional neural networks applied to house numbers digit classification. In *Proceedings of the 21st International Conference on Pattern Recognition (ICPR2012)*(pp. 3288-3291). IEEE.
- Ren, S., He, K., Girshick, R., & Sun, J. (2015). Faster r-cnn: Towards real-time object detection with region proposal networks. In *Advances in neural information processing systems*(pp. 91-99).
- Girshick, R., Donahue, J., Darrell, T., & Malik, J. (2014). Rich feature hierarchies for accurate object detection and semantic segmentation. In *Proceedings of the IEEE conference on computer vision and pattern recognition*(pp. 580-587).
- Krizhevsky, A., Sutskever, I., & Hinton, G. E. (2012). Imagenet classification with deep convolutional neural networks. In *Advances in neural information processing systems*(pp. 1097-1105).

T



5.27 Course: Asset Pricing [T-WIWI-102647]




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

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101482 - Finance 1](#)
[M-WIWI-101483 - Finance 2](#)
[M-WIWI-101502 - Economic Theory and its Application in Finance](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|----------|---------|--|-------|--|---------------------------------|
| ST 2021 | 2530555 | Asset Pricing | 2 SWS | Lecture /  | Uhrig-Homburg |
| ST 2021 | 2530556 | Übung zu Asset Pricing | 1 SWS | Practice /  | Uhrig-Homburg, Reichenbacher |
| Exams | | | | | |
| WT 20/21 | 7900056 | Asset Pricing | | | Uhrig-Homburg |

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

Competence Certificate

Depending on further pandemic developments, the examination will be offered in the summer semester 2021 either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites

None

Recommendation

We strongly recommend knowledge of the basic topics in investments (bachelor course), which will be necessary to be able to follow the course.

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

V

Asset Pricing

2530555, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Organizational issues

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

Literature**Basisliteratur**

- Asset pricing / Cochrane, J.H. - Rev. ed., Princeton Univ. Press, 2005.

Zur Wiederholung/Vertiefung

- Investments and Portfolio Management / Bodie, Z., Kane, A., Marcus, A.J. - 9. ed., McGraw-Hill, 2011.
- The econometrics of financial markets / Campbell, J.Y., Lo, A.W., MacKinlay, A.C. - 2. printing, with corrections, Princeton Univ. Press, 1997.

T

5.28 Course: Asymmetric Encryption Schemes [T-INFO-101260]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: [M-INFO-101198 - Advanced Topics in Cryptography](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 3 | Grade to a third | Each winter term | 1 |



| Exams | | | |
|----------|---------|---|-------------------------|
| WT 20/21 | 7500161 | Asymmetric Encryption Schemes | Geiselman, Müller-Quade |





T

5.29 Course: Auction Theory [T-WIWI-102613]

Responsible: Prof. Dr. Karl-Martin Ehrhart
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101446 - Market Engineering](#)
[M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-101500 - Microeconomic Theory](#)

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

| Events | | | | | |
|----------|---------|--|-------|--|---------|
| WT 20/21 | 2520408 | Auktionstheorie | 2 SWS | Lecture /  | Ehrhart |
| WT 20/21 | 2520409 | Übungen zu Auktionstheorie | 1 SWS | Practice /  | Ehrhart |
| Exams | | | | | |
| WT 20/21 | 7900347 | Auction Theory | | | Ehrhart |

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

Competence Certificate

The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.
 The exam is offered each semester.

Prerequisites

None

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

V

Auktionstheorie

2520408, WS 20/21, 2 SWS, [Open in study portal](#)

Lecture (V)
Online

Literature

- Ehrhart, K.-M. und S. Seifert: Auktionstheorie, Skript zur Vorlesung, KIT, 2011
- Krishna, V.: Auction Theory, Academic Press, Second Edition, 2010
- Milgrom, P.: Putting Auction Theory to Work, Cambridge University Press, 2004
- Ausubel, L.M. und P. Cramton: Demand Reduction and Inefficiency in Multi-Unit Auctions, University of Maryland, 1999

T

5.30 Course: Automated Planning and Scheduling [T-INFO-109085]

Responsible: Prof. Dr. Peter Sanders
Organisation: KIT Department of Informatics
Part of: [M-INFO-104447 - Automated Planning and Scheduling](#)


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





T

5.31 Course: Automated Visual Inspection and Image Processing [T-INFO-101363]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: [M-INFO-100826 - Automated Visual Inspection and Image Processing](#)
[M-INFO-101239 - Machine Vision](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 6 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|----------|---------|--|-------|---|--------------------------|
| WT 20/21 | 24169 | Automated Visual Inspection and Image Processing | 4 SWS | Lecture /  | Beyerer, Zander, Fischer |
| Exams | | | | | |
| WT 20/21 | 7500008 | Automated Visual Inspection and Image Processing | | | Beyerer |
| ST 2021 | 7500003 | Automated Visual Inspection and Image Processing | | | Beyerer |

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

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

V

Automated Visual Inspection and Image Processing

24169, WS 20/21, 4 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

Topics covered:

- sensors and concepts for image acquisition
- light and colour
- image signals (system theory, Fourier transformation, stochastic processes)
- excursion to wave optics
- pre-processing and image enhancement
- image restoration
- segmentation
- morphological image processing
- texture analysis
- detection
- image pyramids, multi scale analysis and wavelet-transform

Educational objective:

- Students have a sound knowledge regarding the basic concepts and methods of image processing (pre-processing and image enhancement, image restoration, image segmentation, morphological filtering, texture analysis, detection, image pyramids, multi-scale analysis and the wavelet transform)
- Students are in the position to work out and to evaluate solution concepts for problems of automated visual inspection
- Students have a sound knowledge of the different sensors and methods for the acquisition of image data as well as of the relevant optical principles
- Students know different concepts to describe image data and they know the essential system theoretical concepts and interrelations

Organizational issues

Die Erfolgskontrolle wird in der Modulbeschreibung erläutert.

Empfehlungen:

Grundkenntnisse der Optik und der Signalverarbeitung sind hilfreich.

Literature

Weiterführende Literatur

- R. C. Gonzalez und R. E. Woods, Digital Image Processing, Prentice-Hall, Englewood Cliffs, New Jersey, 2002
- B. Jähne, Digitale Bildverarbeitung, Springer, Berlin, 2002

T


5.32 Course: Basics of German Company Tax Law and Tax Planning [T-WIWI-108711]





Responsible: Gerd Gutekunst
Prof. Dr. Berthold Wigger

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101511 - Advanced Topics in Public Finance](#)

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

| Events | | | | | |
|----------|---------|---|-------|---|-------------------|
| WT 20/21 | 2560134 | Basics of German Company Tax Law and Tax Planning | 3 SWS | Lecture /  | Wigger, Gutekunst |
| Exams | | | | | |
| WT 20/21 | 790unbe | Basics of German Company Tax Law and Tax Planning | | | Wigger |

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

Competence Certificate

Depending on the further pandemic development in the summer semester 2021 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 20/21, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

Workload:

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

Organizational issues

Montag 17:30:00-19:00 Uhr per MS-Teams-Livestream


(Achtung: In der ersten Vorlesungswoche beginnt die Veranstaltung um 18:00 Uhr)





T

5.33 Course: Big Data Analytics [T-INFO-101305]

Responsible: Prof. Dr.-Ing. Klemens Böhm**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100768 - Big Data Analytics](#)[M-INFO-101208 - Innovative Concepts of Data and Information Management](#)[M-INFO-101256 - Theory and Practice of Data Warehousing and Mining](#)

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

| Events | | | | | |
|----------|---------|------------------------------------|-------|---|------|
| WT 20/21 | 24114 | Big Data Analytics | 3 SWS | Lecture /  | Böhm |
| Exams | | | | | |
| WT 20/21 | 7500087 | Big Data Analytics | | | Böhm |
| ST 2021 | 7500078 | Big Data Analytics | | | Böhm |


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





T

5.34 Course: Big Data Analytics 2 [T-INFO-105742]

Responsible: Prof. Dr.-Ing. Klemens Böhm**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-101208 - Innovative Concepts of Data and Information Management](#)
[M-INFO-101256 - Theory and Practice of Data Warehousing and Mining](#)
[M-INFO-102773 - Big Data Analytics 2](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------|---------|
| Oral examination | 3 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|----------|---------|--------------------------------------|-------|---|--------|
| ST 2021 | 2400042 | Big Data Analytics 2 | 2 SWS | Lecture /  | Fouché |
| Exams | | | | | |
| WT 20/21 | 7500190 | Big Data Analytics 2 | | | Böhm |
| ST 2021 | 7500092 | Big Data Analytics 2 | | | Böhm |

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

none

T


5.35 Course: Biologically Inspired Robots [T-INFO-101351]





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

Organisation: KIT Department of Informatics

Part of: [M-INFO-101251 - Autonomous Robotics](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|--------|
| ST 2021 | 24619 | Biologisch Motivierte Robotersysteme | 2 SWS | Lecture /  | Rönnau |
| Exams | | | | | |
| WT 20/21 | 7500346 | Biologically Inspired Robot | | | Rönnau |
| ST 2021 | 7500237 | Biologically Inspired Robot | | | Rönnau |

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

T


5.36 Course: Biometric Systems for Person Identification [T-INFO-101297]


Responsible: Prof. Dr.-Ing. Rainer Stiefelhagen

Organisation: KIT Department of Informatics

Part of: [M-INFO-101239 - Machine Vision](#)

| Type | Credits | Grading scale | Version |
|------------------|---------|------------------|---------|
| Oral examination | 3 | Grade to a third | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|--------------|
| ST 2021 | 2403011 | Biometric Systems for Person Identification | 2 SWS | Lecture /  | Sarfraz |
| Exams | | | | | |
| WT 20/21 | 7500043 | Biometric Systems for Person Identification | | | Stiefelhagen |

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

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

V

Biometric Systems for Person Identification

2403011, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

Biometrics deals with the science of recognizing and identifying humans based on their biometrics traits, such as finger prints, face, iris, gait etc. With the increasing demands put on security and surveillance e.g. safer access control, border control/passports and identifying criminals /law enforcement, biometrics becomes more and more essential and technologies are being developed to solve many issues in this demanding area of research. In this course, the students will learn the fundamental concepts of underlying biometrics technologies, understanding of various techniques for different topics/technologies used in biometrics.

The topics include

- Introduction: Biometrics acquisitions and image processing, basic introduction to the area of computer vision/machine learning applied to biometrics
- Biometrics system: requirements, enrollment, identification/verification, performance metrics
- Biometrics technologies: Overview of different biometrics technologies
- Finger print recognition: image enhancement, state-of-the art techniques, challenges
- Iris recognition: image acquisitions, feature extraction, state-of-the-art techniques, challenges
- Face recognition: introduction, current methods, applications
- Palm print recognition: current methods
- Gait recognition: emerging methods
- Multi-Biometrics: multiple modes of biometrics, fusion strategies
- Risk analysis: attacks, liveness detection, fraud prevention

T

5.37 Course: Blockchains & Cryptofinance [T-WIWI-108880]

Responsible: Dr. Philipp Schuster
Prof. Dr. Marliese Uhrig-Homburg

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101409 - Electronic Markets](#)
[M-WIWI-101446 - Market Engineering](#)
[M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|-----------------|---------|
| Written examination | 4,5 | Grade to a third | see Annotations | 1 |

| Exams | | | |
|----------|---------|---|---------------|
| WT 20/21 | 7900028 | Blockchains & Cryptofinance | Uhrig-Homburg |

Competence Certificate

Depending on further pandemic developments, the examination will be offered in the summer semester 2021 either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites

None

Recommendation

None

Annotation


The lecture is currently not offered.





T

5.38 Course: Bond Markets [T-WIWI-110995]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

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

| Events | | | | | |
|----------|---------|------------------------------|-------|---|-----------------------|
| WT 20/21 | 2530560 | Bond Markets | 3 SWS | Lecture / Practice (/ ) | Cölsch, Uhrig-Homburg |
| Exams | | | | | |
| WT 20/21 | 7900292 | Bond Markets | | | Uhrig-Homburg |

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

Competence Certificate

Depending on further pandemic developments, the examination will be offered in the summer semester 2021 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).

Annotation

This course will be held in English.

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

V

Bond Markets

2530560, WS 20/21, 3 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

Content

The lecture "Bond Markets" deals with the national and international bond markets, which are an important source of financing for companies, as well as for the public sector. After an overview of the most important bond markets, different yield definitions are discussed. Based on this, the concept of the yield curve is presented. In addition, the theoretical and empirical relationships between ratings, default probabilities and spreads are analyzed. The focus will then be on questions regarding the valuation, measurement, management and control of credit risks.

The total workload for this course is approximately 135 hours (4.5 credits).

The assessment consists of a written exam (75min.) (according to §4(2), 1 SPO). A bonus can be earned through successful participation in the tutorial sessions. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one level (0.3 or 0.4). The examination is offered in each semester and can be repeated at any regular examination date.

Students deepen their knowledge of national and international bond markets. They gain knowledge of the traded instruments and their key figures for describing default risk such as ratings, default probabilities or credit spreads.

Organizational issues

Blockveranstaltung: Do 14:00-19:00 Uhr, Fr 9:45-17:15 Uhr

05./06.11., 19./20.11., 03./04.12.20

T

5.39 Course: Bond Markets - Models & Derivatives [T-WIWI-110997]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

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

| Events | | | | | |
|----------|---------|---|-------|------------------------|---------------|
| WT 20/21 | 2530565 | Bond Markets - Models & Derivatives | 2 SWS | Lecture / Practice (/) | Uhrig-Homburg |
| Exams | | | | | |
| WT 20/21 | 7900295 | Bond Markets - Models & Derivatives | | | Uhrig-Homburg |

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

Competence Certificate

The assessment of success consists in equal parts of a written thesis and an oral exam including a discussion of one's own work. The main examination is offered once a year, re-examinations every semester.

Recommendation

Knowledge of "Bond Markets" and "Derivatives" courses is very helpful.

Annotation

This course will be held in English.

Below you will find excerpts from events related to this course:

V

Bond Markets - Models & Derivatives

2530565, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

Content

- **Competence Certificate:** The assessment of success consists in equal parts of a written thesis and an oral exam (according to §4(2), 3 SPO) including a discussion of one's own work. The main examination is offered once a year, re-examinations every semester.
- **Competence Goal:** Students deepen their knowledge of national and international bond markets. They are able to apply the knowledge they have gained about traded instruments and common valuation models for pricing derivative financial instruments.
- **Prerequisites:**
- **Content:** The lecture "Bond Markets – Models & Derivatives" deepens the content of the lecture "Bond Markets". The modelling of the dynamics of yield curves and the management of credit risks forms the theoretical foundation for the valuation of interest rate and credit derivatives to be discussed. In this course, students deal intensively with selected topics and acquire the relevant knowledge on their own.
- **Recommendation:** Knowledge of "Bond Markets" and "Derivatives" courses is very helpful.
- **Workload:** The total workload for this course is approximately 90 hours (3.0 credits).

Organizational issues

Blockveranstaltung

freitags 9:45-17:15 Uhr, 15.01. und 22.01.21

T

5.40 Course: Bond Markets - Tools & Applications [T-WIWI-110996]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 1,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---|---------------|---------|-----------------------|
| WT 20/21 | 2530562 | Bond Markets - Tools & Applications | 1 SWS | Block / | Uhrig-Homburg, Grauer |
| Exams | | | | | |
| WT 20/21 | 7900294 | Bond Markets - Tools & Applications | Uhrig-Homburg | | |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

The assessment consists of an empirical case study with written elaboration and presentation. The main examination is offered once a year, re-examinations every semester.

Recommendation

Knowledge of the "Bond Markets" course is very helpful.

Annotation

This course will be held in English.

Below you will find excerpts from events related to this course:

V

Bond Markets - Tools & Applications

2530562, WS 20/21, 1 SWS, Language: English, [Open in study portal](#)

Block (B)
Online

Content

- **Competence Certificate:** The assessment consists of an empirical case study with written elaboration and presentation (according to §4(2), 3 SPO). The main examination is offered once a year, re-examinations every semester.
- **Competence Goal:** The students apply various methods in practice within the framework of a project-related case study. They are able to deal with empirical data and analyze them in a targeted manner.
- **Content:** The course "Bond Markets – Tools & Applications" includes a hands-on project in the field of national and international bond markets. Using empirical datasets, the students have to apply practical methods in order to analyze the data in a targeted manner.
- **Recommendation:** Knowledge of the "Bond Markets" course is very helpful.
- **Workload:** The total workload for this course is approximately 45 hours (1.5 credits).

Organizational issues

Blockveranstaltung am 10.12.20, Zeiten nach gesondertem Aushang

Seminarraum 320 Geb. 09.21

T

5.41 Course: Building Intelligent and Robo-Advised Portfolios [T-WIWI-106442]

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103247 - Intelligent Risk and Investment Advisory](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 9 | Grade to a third | Each summer term | 1 |

Competence Certificate

The exam will be cancelled for the winter semester 2019/2020.

The exam tests the material of the current semester and takes place during the lecture-free period. Students who don't pass the exam are allowed to re-take the exam.

Details of the grade formation will be announced at the beginning of the event.

Prerequisites

None.

Recommendation

Good skills in applied math modeling (differential equations).

Annotation

The course is not offered regularly.

T

5.42 Course: Business Administration in Information Engineering and Management [T-WIWI-102886]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101443 - Information Engineering and Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 5 | Grade to a third | Each summer term | 1 |

| Exams | | | |
|----------|---------|---|--------------|
| WT 20/21 | 7979537 | Business Administration in Information Engineering and Management | Geyer-Schulz |

Competence Certificate

The lecture is no longer offered.

Prerequisites

None

Recommendation



Basic knowledge from Operations Research (linear programming) and from decision theory are expected.

T

5.43 Course: Business Data Analytics: Application and Tools [T-WIWI-109863]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103117 - Data Science: Data-Driven Information Systems](#)
[M-WIWI-103118 - Data Science: Data-Driven User Modeling](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---------|---------|--|-------|--|------------------------|
| ST 2021 | 2540466 | Business Data Analytics: Application and Tools | 2 SWS | Lecture /  | Dann, Grote, Stoeckel |
| ST 2021 | 2540467 | Excercise Business Data Analytics: Application and Tools | 1 SWS | Practice /  | Badewitz, Grote, Sterk |

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 excercises 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.

Prerequisites

None

Recommendation

Knowledge of (object-oriented) programming and statistics is helpful.

Annotation

Course name until winter semester 2018/2019 "Applied Analytics with Open Source Tools" (T-WIWI-108438)

Below you will find excerpts from events related to this course:

V

Business Data Analytics: Application and Tools

2540466, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

**5.44 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 20/21 | 2540484 | Business Data Strategy | 2 SWS | Lecture / | Weinhardt, van Dinter |
| WT 20/21 | 2540485 | Übung zu Business Data Strategy | 1 SWS | Practice / | Weinhardt, Badewitz |
| Exams | | | | | |
| WT 20/21 | 7900226 | Business data strategy | | | Weinhardt |
| WT 20/21 | 7900234 | Business Data Strategy | | | 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 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
On-Site

Content

With new methods for capturing and using different types of data and industry's recognition that society's use of data is less than optimal, the need for comprehensive strategies is more important than ever before. Advances in cybersecurity and information sharing and the use of data in its raw form for decision making all add to the complexity of integrated processes, ownership, stewardship, and sharing. The life cycle of data in its entirety spans the infrastructure, system design, development, integration, and implementation of information-enabling solutions. This lecture focuses on teaching about these dynamics and tools to comprehend and manage them in organisation contexts. Given the increasing size and complexity of data, methods for the transformation and structured preparation are an important tool in the process of sense-making. Modern software solutions and programming languages provide frameworks for such tasks that form another part of this course ranging from conceptual systems modelling to data manipulation to automated generation of HTML reports and web-applications.

Organizational issues**Application/Registration**

Attendance will be limited to 20-25 participants. Application/registration is therefore preliminary. After the application deadline has passed, positions will be allocated, based on evaluation of the previous study records. Applications are accepted only through the Wiwi-Portal: <https://portal.wiwi.kit.edu/ys/3871>

Anmeldung

Die Teilnehmeranzahl ist begrenzt (ca. 20-25 Plätze). Eine Anmeldung erfolgt deshalb zunächst unter Vorbehalt. Nach Ablauf der Anmeldefrist werden die Plätze zur Teilnahme, nach Einsicht der Vorleistungen im Studium vergeben. Die Anmeldung/Bewerbung erfolgt ausschließlich über das Wiwi-Portal: <https://portal.wiwi.kit.edu/ys/3871>

T

5.45 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-101470 - Data Science: Advanced CRM](#)
[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 20/21 | 2540531 | Business Dynamics | 2 SWS | Lecture | Geyer-Schulz, Glenn |
| WT 20/21 | 2540532 | Exercise Business Dynamics | 1 SWS | Practice | Geyer-Schulz, Glenn |
| Exams | | | | | |
| WT 20/21 | 7979777 | Business Dynamics | | | Geyer-Schulz |

Competence Certificate

Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.

A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites

None

Recommendation

None

Below you will find excerpts from events related to this course:

V

Business Dynamics2540531, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Organizational issues

Blockveranstaltung freitags, samstags 8 -17:15 Uhr

Literature

John D. Sterman. Business Dynamics: Systems Thinking and Modeling for a Complex World. McGraw-Hill, 2000.

T


5.46 Course: Business Intelligence Systems [T-WIWI-105777]



Responsible: Prof. Dr. Alexander Mädche
Mario Nadj
Dr. Peyman Toreini

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101506 - Service Analytics](#)
[M-WIWI-101510 - Cross-Functional Management Accounting](#)
[M-WIWI-103117 - Data Science: Data-Driven Information Systems](#)
[M-WIWI-104068 - Information Systems in Organizations](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|----------|---------|---|-------|---|--------|
| WT 20/21 | 2540422 | Business Intelligence Systems | 3 SWS | Lecture /  | Mädche |
| Exams | | | | | |
| WT 20/21 | 7900224 | Business Intelligence Systems | | | Mädche |
| ST 2021 | 7900149 | Business Intelligence Systems | | | Mädche |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Alternative exam assessment. The assessment consists of a one-hour exam and the implementation of a Capstone project. Details will be announced at the beginning of the course.

Prerequisites

None

Recommendation

Basic knowledge on database systems is helpful.

Below you will find excerpts from events related to this course:

V

Business Intelligence Systems

2540422, WS 20/21, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)
On-Site

Content

In most modern enterprises, Business Intelligence & Analytics (BI&A) Systems represent a core enabler of decision-making in that they are supplying up-to-date and accurate information about all relevant aspects of a company's planning and operations: from stock levels to sales volumes, from process cycle times to key indicators of corporate performance. Modern BI&A systems leverage beyond reporting and dashboards also advanced analytical functions. Thus, today they also play a major role in enabling data-driven products and services. The aim of this course is to introduce theoretical foundations, concepts, tools, and current practice of BI&A Systems from a managerial and technical perspective.

The course is complemented with an engineering capstone project, where students work in a team with real-world use cases and data in order to create running Business intelligence & Analytics system prototypes.

Learning objectives

- Understand the theoretical foundations of key Business Intelligence & Analytics concepts supporting decision-making
- Explore key capabilities of state-of-the-art Business Intelligence & Analytics Systems
- Learn how to successfully implement and run Business Intelligence & Analytics Systems from multiple perspectives, e.g. architecture, data management, consumption, analytics
- Get hands-on experience by working with Business Intelligence & Analytics Systems with real-world use cases and data

Prerequisites

This course is limited to a capacity of 50 places. The capacity limitation is due to the attractive format of the accompanying engineering capstone project. Strong analytic abilities and profound skills in SQL as well as Python and/or R are required. Students have to apply with their CV and transcript of records.

Literature

- Turban, E., Aronson, J., Liang T.-P., Sharda, R. 2008. "Decision Support and Business Intelligence Systems".
- Watson, H. J. 2014. "Tutorial: Big Data Analytics: Concepts, Technologies, and Applications," *Communications of the Association for Information Systems* (34), p. 24.
- Arnott, D., and Pervan, G. 2014. "A critical analysis of decision support systems research revisited: The rise of design science," *Journal of Information Technology* (29:4), Nature Publishing Group, pp. 269–293 (doi: 10.1057/jit.2014.16).
- Carlo, V. (2009). "Business intelligence: data mining and optimization for decision making". Editorial John Wiley and Sons, 308-317.
- Chen, H., Chiang, R. H. L, and Storey, V. C. 2012. „Business Intelligence and Analytics: From Big Data to Big Impact,“ *MIS Quarterly* (36:4), pp. 1165-1188.
- Davenport, T. 2014. *Big Data @ Work*, Boston, MA: Harvard Business Review.
- Economist Intelligence Unit. 2015 "Big data evolution: Forging new corporate capabilities for the long term"
- Power, D. J. 2008. "Decision Support Systems: A Historical Overview," *Handbook on Decision Support Systems*, pp. 121–140 (doi: 10.1007/978-3-540-48713-5_7).
- Sharma, R., Mithras, S., and Kankanhalli, A. 2014. „Transforming decision-making processes: a research agenda for understanding the impact of business analytics on organisations,“ *European Journal of Information Systems* (23:4), pp. 433-441.
- Silver, M. S. 1991. "Decisional Guidance for Computer-Based Decision Support," *MIS Quarterly* (15:1), pp. 105-122.

Further literature will be made available in the lecture.

T

5.47 Course: Business Models in the Internet: Planning and Implementation [T-WIWI-102639]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101410 - Business & Service Engineering](#)
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-102806 - Service Innovation, Design & Engineering](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---------|---------|--|-------|--------------|------------------------|
| ST 2021 | 2540456 | Internet Business Models | 2 SWS | Lecture / 📱 | Huber |
| ST 2021 | 2540457 | Übungen zu Geschäftsmodelle im Internet: Planung und Umsetzung | 1 SWS | Practice / 📱 | Richter, Huber, Fegert |

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

Competence Certificate

Please note that in the summer semester 2020 the exam will only be offered to students who have completed the semester performance but have not yet taken the exam. From summer semester 2021 the exam will be offered again regularly.

Success is monitored through ongoing elaborations and presentations of tasks and a written exam (60 minutes) at the end of the lecture period. The scoring scheme for the overall evaluation will be announced at the beginning of the course.

Successful participation in the exercises is a prerequisite for admission to the written examination.

Prerequisites

None

Recommendation

None

Annotation

Please note that the lecture will not be offered in summer semester 2020 due to the research semester of Prof. Weinhardt.

Below you will find excerpts from events related to this course:

V

Internet Business Models

2540456, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Literature




Wird in der Vorlesung bekannt gegeben.





T

5.48 Course: Business Planning [T-WIWI-102865]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|-----------------------------|
| WT 20/21 | 2545007 | Business Planning for Founders (ENTECH) | 2 SWS | Seminar /  | Wohlfeil, Bauman, Terzidis |
| ST 2021 | 2545007 | Business Planning for Founders | 2 SWS | Seminar /  | Kleinn, Ntagiakou, Terzidis |
| ST 2021 | 2545109 | Business Planning for Founders in the field of IT-Security (KASTEL) | 2 SWS | Seminar /  | Ntagiakou, Terzidis |
| Exams | | | | | |
| WT 20/21 | 7900023 | Business Planning for Founders | | | Terzidis |
| WT 20/21 | 7900155 | Business Planning for Founders in the field of IT-Security | | | Terzidis |
| ST 2021 | 7900234 | Business Planning for Founders | | | Terzidis |
| ST 2021 | 7900236 | Business Planning for Founders in the field of IT-Security | | | 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 (ENTECH)

2545007, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)
Online

Content

The seminar introduces students to the basic concepts of business planning for entrepreneurs. On the one hand, this involves concepts for the concretisation of business ideas (business modelling, market potential assessment, resource planning, etc.) and on the other hand, the preparation of an implementable business plan (with or without VC financing). In the course of the seminar, the students are familiarized with methods of further developing patents and business ideas into a more concrete business plan and formulating them in a business plan.

V

Business Planning for Founders

2545007, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)
Online

Content

The seminar introduces students to the basic concepts of business planning for entrepreneurs. On the one hand, this involves concepts for the concretisation of business ideas (business modelling, market potential assessment, resource planning, etc.) and on the other hand, the preparation of an implementable business plan (with or without VC financing). In the course of the seminar, the students are familiarized with methods of further developing patents and business ideas into a more concrete business plan and formulating them in a business plan.

Organizational issues

Block am 26.04., 03.05., 10.05. jeweils 9-17 Uhr


Business Planning for Founders in the field of IT-Security (KASTEL)

2545109, SS 2021, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Content

In order to identify opportunities, the participants should identify fields for entrepreneurial opportunities in a systematic web research. For this purpose, Systematic Mapping procedures will be adapted to the research of general web sources and applied to the research of interesting fields in the area of cyber security.

Information about the seminar:

In the seminar you will work in groups of max. 4 persons. Group applications are welcome but not a prerequisite for participation. Some of the seminars will be held in English.

The focus of the seminar is Opportunity Recognition in the field of IT-Security, followed by ideation sessions with the aim to find possible applications for technologies that are developed at the KIT. Prototyping and also Pitching are part of the seminar.

Target group:

Master Students

Information on the allocation of seminar places:

The registration for the seminar is possible in the Wiwi portal in the period from 11.09.2019 to 05.10.2019 at 23:55 clock. To apply for the seminar, please send us a letter of motivation (max. 5 sentences).

Seminar contents:

- To identify opportunities, the participants should identify fields for entrepreneurial opportunities in a systematic web research. For this purpose, Systematic Mapping procedures will be adapted to the research of general web sources and applied to the research of interesting fields in the area of cyber security.
- All information will be discussed with experts on the second seminar day. The aim of the first two sessions is to develop a systematic segmentation of market needs.
- After the teams have been formed, the workshop "Technology Application Selection (TAS)" follows. This is a framework developed by EnTechnon that will help the teams to develop concrete business ideas based on given technologies. The three steps of the TAS will be the content of the third and fourth seminar days. Participants will generate ideas and then - based on specific criteria that we will provide - choose an idea on which they will build their value proposition.
- The final session before the final day will deal with prototyping and validation. This will use rapid prototyping and validation methods from the design thinking environment.
- On the last day - before their final presentations - the participants learn how to present the idea in a short presentation (pitch) to an interested audience.

Organizational issues



Blockveranstaltung im Rahmen des KASTEL Projekts am 12.05., 09.06., 23.06.

T

5.49 Course: Business Strategies of Banks [T-WIWI-102626]

Responsible: Prof. Dr. Wolfgang Müller
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|----------------|
| WT 20/21 | 2530299 | Business Strategies of Banks | 2 SWS | Lecture /  | Müller |
| ST 2021 | 2530299 | Business Strategies of Banks | 2 SWS | Lecture /  | Müller |
| Exams | | | | | |
| WT 20/21 | 7900064 | Business Strategies of Banks | | | Müller, Ruckes |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

See German version.

Prerequisites

None

Recommendation

None

Below you will find excerpts from events related to this course:

V

Business Strategies of Banks

2530299, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
On-Site

Content

The management of a bank is in charge of the determination and implementation of business policy - taking into account all relevant endogenous and exogenous factors - that assures the bank's success in the long run. In this context, there exists a large body of banking models and theories which are helpful in describing the success and risk of a bank. This course is meant to be the bridging of banking theory and practical implementation. In the course of the lectures students will learn to take on the bank management's perspective.

The first chapter deals with the development of the banking sector. Making use of appropriate assumptions, a banking policy is developed in the second chapter. The design of bank services (ch. 3) and the adequate marketing plan (ch. 4) are then built on this framework. The operational business of banks must be guided by appropriate risk and earnings management (ch. 5 and 6), which are part of the overall (global) bank management (ch. 7). Chapter eight, at last, deals with the requirements and demands of bank supervision as they have significant impact on a bank's corporate policy.

Learning outcomes:

Students are in a position to discuss the principles of commercial banking. They are familiar with fundamental concepts of bank management and are able to apply them.

Workload:

The total workload for this course is approximately 90 hours. For further information see the German version.

Literature**Weiterführende Literatur:**

- Ein Skript wird im Verlauf der Veranstaltung kapitelweise ausgeteilt.
- Hartmann-Wendels, Thomas; Pfingsten, Andreas; Weber, Martin; 2014, Bankbetriebslehre, 6. Auflage, Springer

**Business Strategies of Banks**2530299, SS 2021, 2 SWS, Language: German, [Open in study portal](#)**Lecture (V)**
On-Site**Literature****Weiterführende Literatur:**


- Ein Skript wird im Verlauf der Veranstaltung kapitelweise ausgeteilt.
- Hartmann-Wendels, Thomas; Pfingsten, Andreas; Weber, Martin; 2014, Bankbetriebslehre, 6. Auflage, Springer





T

5.50 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 20/21 | 2545105 | Case studies seminar: Innovation management | 2 SWS | Seminar /  | Weissenberger-Eibl |
| Exams | | | | | |
| WT 20/21 | 7900237 | Case Studies Seminar: Innovation Management | | | Weissenberger-Eibl |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Alternative exam assessments (§4(2), 3 SPO).

Prerequisites

None

Recommendation

Prior attendance of the course Innovation Management is recommended.

Below you will find excerpts from events related to this course:

V

Case studies seminar: Innovation management
 2545105, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
 Blended (On-Site/Online)

Content

The objective of the seminar is to master selected concepts and methods of innovation management and then to apply these practically. Working in groups, the students apply the described concepts and methods of innovation management to a case study from the automotive industry to answer specific questions. Accordingly, the block seminar involves a switch from input to the application of this input. At the end, the results of the group work are presented in the form of a seminar paper and discussed by the whole course. A short introduction to presentation techniques is planned to help students prepare the seminar papers.

Literature

Werden in der ersten Veranstaltung bekannt gegeben.

T

5.51 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 2021 | 2550494 | Challenges in Supply Chain Management | 3 SWS | Lecture / | Mohr |

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:

V

Challenges in Supply Chain Management

2550494, SS 2021, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)
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

Blockveranstaltung, Termine werden bekannt gegeben

Literature

Wird in Abhängigkeit vom Thema in den Projektteams bekanntgegeben.

T


5.52 Course: Cognitive Systems [T-INFO-101356]





Responsible: Prof. Dr. Gerhard Neumann
Prof. Dr. Alexander Waibel

Organisation: KIT Department of Informatics

Part of: [M-INFO-100819 - Cognitive Systems](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 6 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|-------------------------|
| ST 2021 | 24572 | Kognitive Systeme | 4 SWS | Lecture / Practice (/ ) | Waibel, Stüker, Neumann |
| Exams | | | | | |
| WT 20/21 | 7500277 | Cognitive Systems Waibel/Neumann | | | Waibel, Neumann |
| ST 2021 | 7500157 | Cognitive Systems | | | Waibel, Neumann |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.53 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 |

| Exams | | | |
|----------|---------|---|---------|
| WT 20/21 | 7900335 | Competition in Networks | Mitusch |

Competence Certificate

Result of success is made by a 60 minutes written examination during the semester break (according to §4(2), 1 ERSC). Examination is offered every semester and can be retried at any regular examination date.

Prerequisites

None.

Recommendation

Basics of microeconomics obtained within the undergraduate programme (B.Sc) of economics are required.

Annotation

Due to the research semester of Prof. Mitusch the course will not be offered in the winter semester 20/21. An examination will be offered in each semester.

T

**5.54 Course: Computational Complexity Theory, with a View Towards Cryptography
[T-INFO-103014]**

Responsible: Prof. Dr. Dennis Hofheinz
Prof. Dr. Jörn Müller-Quade

Organisation: KIT Department of Informatics

Part of: [M-INFO-101575 - Computational Complexity Theory, with a View Towards Cryptography](#)


| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------|---------|
| Oral examination | 6 | Grade to a third | Irregular | 1 |

T

5.55 Course: Computational Geometry [T-INFO-104429]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [M-INFO-102110 - Computational Geometry](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------|---------|
| Oral examination | 6 | Grade to a third | Irregular | 2 |

| Events | | | | | |
|----------|---------|--|-------|---|------------------|
| WT 20/21 | 2400083 | Computational Geometry | 4 SWS | Lecture / Practice (/ ) | Bläsius, Wilhelm |
| Exams | | | | | |
| WT 20/21 | 7500180 | Computational Geometry | | | Bläsius |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Below you will find excerpts from events related to this course:

V

Computational Geometry

2400083, WS 20/21, 4 SWS, Language: German, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

Organizational issues

nur Masterstudiengang Informatik

T

5.56 Course: Computational Risk and Asset Management [T-WIWI-102878]

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-105032 - Data Science for Finance](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 4 |

| Events | | | | | |
|----------|---------|---|-------|-----------|--------|
| WT 20/21 | 2500015 | Computational Risk and Asset Management | 2 SWS | Lecture / | Ulrich |
| Exams | | | | | |
| WT 20/21 | 7900217 | Computational Risk and Asset Management | | | Ulrich |
| WT 20/21 | 7900364 | Computational Risk and Asset Management | | | Ulrich |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

The module examination takes the form of an alternative exam assessment.

The alternative exam assessment consists of a Python-based "Takehome Exam". At the end of the third week of January, the student is given a "Takehome Exam" which he processes and sends back independently within 4 hours using Python. Precise instructions will be announced at the beginning of the course. The alternative exam assessment can be repeated a maximum of once. A timely repeat option takes place at the end of the third week in March of the same year. More detailed instructions will be given at the beginning of the course.

Recommendation

Basic knowledge of capital market theory.

Below you will find excerpts from events related to this course:

V

Computational Risk and Asset Management

2500015, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

The course covers several topics, among them:

- Pattern detection in price and return data in equity, interest rate, futures and option markets.
Quantitative Portfolio Strategies
- Modeling Return Densities using tools from financial econometrics, data science and machine learning
- Valuation of equity, fixed-income, futures and options in a coherent framework to possibly exploit arbitrage opportunities
- Neural networks and Natural Language Processing

T

5.57 Course: Computational Risk and Asset Management I [T-WIWI-107032]

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103247 - Intelligent Risk and Investment Advisory](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

Competence Certificate

The exam will be cancelled for the winter semester 2019/2020.

The grade consists of an exam and seven problem sets, which are distributed throughout the semester. All problem sets count equally and make up in total 25% of the final grade. The exam accounts for the remaining 75%. The exam is based on all the material that is taught in the current semester. The exam takes place in the last week of the lecture period. Students who fail the exam are allowed to retake the exam.

Prerequisites

None.

Recommendation

None

T

5.58 Course: Computational Risk and Asset Management II [T-WIWI-106494]

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103247 - Intelligent Risk and Investment Advisory](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

Competence Certificate

The exam will be cancelled for the winter semester 2019/2020.

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation and 6 problem sets, which are distributed throughout the semester. All problem sets count equally and make up in total 25% of the final grade. The exam accounts for the remaining 75%. The exam is based on all the material that is taught in the current semester. The exam takes place in the last week of the lecture period. Students who fail the exam are allowed to retake the exam.

Prerequisites

None.

Recommendation


It is recommend that students have studied the material of „Computational Risk and Asset Management I“.





T

5.59 Course: Computer Contract Law [T-INFO-102036]

Responsible: Michael Bartsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101215 - Intellectual Property Law](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---------------------------------------|-------|---|--------------|
| WT 20/21 | 2411604 | Computer Contract Law | 2 SWS | Lecture /  | Menk |
| Exams | | | | | |
| WT 20/21 | 7500065 | Computer Contract Law | | | Dreier, Matz |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Below you will find excerpts from events related to this course:

V

Computer Contract Law

2411604, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

The course deals with contracts from the following areas:

- Contracts of programming, licencing and maintaining software
- Contracts in the field of IT employment law
- IT projects and IT Outsourcing
- Internet Contracts

From these areas single contracts will be chosen and discussed (e.g. software maintenance, employment contract with a software engineer). Concerning the respective contract the technical features, the economic background and the subsumption in the national law of obligation (BGB-Schuldrecht) will be discussed. As a result different contractual clauses will be developed by the students. Afterwards typical contracts and conditions will be analysed with regard to their legitimacy as standard business terms (AGB). It is the aim to show the effects of the german law of standard business terms (AGB-Recht) and to point out that contracts are a means of drafting business concepts and market appearance.

It is the aim of this course to provide students with knowledge in the area of contract formation and formulation in practice that builds upon the knowledge the students have already acquired concerning the legal protection of computer programs. Students shall understand how the legal rules depend upon, and interact with, the economic background and the technical features of the subject. The contract drafts shall be prepared by the students and will be corporately completed during the lecture. It is the aim of the course that students will be able to formulate contracts by themselves.

Organizational issues

Die Veranstaltung findet im **WS 2020/2021** in Form eines **Online-Stream live** statt.

Literature

- Langenfeld, Gerrit Vertragsgestaltung Verlag C.H.Beck, III. Aufl. 2004
- Heussen, Benno Handbuch Vertragsverhandlung und Vertragsmanagement Verlag C.H.Beck, II. Aufl. 2002
- Schneider, Jochen Handbuch des EDV-Rechts Verlag Dr. Otto Schmidt KG, III. Aufl. 2002

Weiterführende Literatur

Ergänzende Literatur wird in den Vorlesungsfolien angegeben.

T 5.60 Course: Computer Vision for Human-Computer Interaction [T-INFO-101347]

Responsible: Prof. Dr.-Ing. Rainer Stiefelhagen
Organisation: KIT Department of Informatics
Part of: [M-INFO-101239 - Machine Vision](#)

| | | | | |
|------------------------------------|---------------------|--|---------------------------------------|---------------------|
| Type Written examination | Credits 6 | Grading scale Grade to a third | Recurrence Each winter term | Version 2 |
|------------------------------------|---------------------|--|---------------------------------------|---------------------|

| Events | | | | | |
|----------|----------|--|-------|--------------|-----------------------|
| WT 20/21 | 24180 | Computer Vision for Human-Computer Interaction | 4 SWS | Lecture / 📱 | Stiefelhagen, Sarfraz |
| WT 20/21 | 80260205 | Computer Vision für MMI | | Written exam | Stiefelhagen |
| Exams | | | | | |
| WT 20/21 | 7500044 | Computer Vision for Human-Computer Interaction | | | Stiefelhagen |
| ST 2021 | 7500060 | Computer Vision for Human-Computer Interaction | | | Stiefelhagen |

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

Below you will find excerpts from events related to this course:

V

Computer Vision for Human-Computer Interaction
 24180, WS 20/21, 4 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

In this lecture current projects of the field of image processing will be presented which deal with the visual perception of persons re. human-computer interaction.

In respect of the individual topics we will discuss various methods and algorithms, their pros and cons and state of the art:

- Face detection and localisation
- Facial expression
- Assessment of head turns and viewing direction
- Person tracking and localisation
- Articulated body tracking
- Gesture recognition
- Audio-visual speech recognition
- Multi-camera environments
- Tools and libraries

The student acquires a basic understanding of computer vision topics within the context of human-computer interaction and learns how to apply them.

Literature

Weiterführende Literatur


Wissenschaftliche Veröffentlichungen zum Thema, werden auf der VL-Website bereitgestellt.





T

5.61 Course: Consulting in Practice [T-INFO-101975]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101208 - Innovative Concepts of Data and Information Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|----------------------|---------|---------------|------------|---------|
| Completed coursework | 1,5 | pass/fail | Irregular | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|------------|
| WT 20/21 | 24664 | Praxis der Unternehmensberatung | 2 SWS | Lecture /  | Böhm, Lang |
| Exams | | | | | |
| WT 20/21 | 7500308 | Consulting in Practice | | | Böhm |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Below you will find excerpts from events related to this course:

V

Praxis der Unternehmensberatung

24664, WS 20/21, 2 SWS, [Open in study portal](#)

Lecture (V)
Online

Content

The market for consulting services grows annually by 20% and is therefore one of the leading growth sectors and professional fields in the future. This trend is in particular driven by the IT industry. Here, widely used standard software moves the focus of the future professional field from software development to consulting. In this context, consulting services have usually a broad definition, reaching from pure IT-focused consulting (e.g., deployment of SAP) to strategic consulting (strategy, organisation etc). In contrast to common rumors, a qualification in business studies is not a must. This opens up a diversified and exciting field with exceptional development perspectives for computer science students. The course deals thematically with the two fields consulting in general and function-specific consulting (with IT consulting as an example).

The structure of the course is oriented along the phases of a consulting project:

- Diagnosis: The consultant as an analytic problem solver.
- Strategic adjustment/redesign of the core processes: Optimisation/redesign of essential business functionality to solve the diagnosed problems in cooperation with the client.
- Implementation: Installation of the solutions in the clients` organisation for assuring the implementation.

Emphasised topics in the course are:

- Elementary problem solving: Problem definition, structuring of problems and focussing through the usage of tools (e.g., logic and hypothesis trees), creative techniques, solution systems etc.
- Obtaining information effectively: Access of information sources, interview techniques etc.
- Effective communication of findings/recommendations. Analysis/planning of communication (media, audience, formats), communication styles (e.g., top-down vs. bottom-up), special topics (e.g., arrangement of complex information) etc.
- Efficient teamwork: Tools for optimising efficient work, collaboration with clients, intellectual and process leadership in the team etc.

At the end of the course, the participants

- have gained knowledge and understanding for the activities of the consulting process in general,
- have gained function-specific knowledge and understanding of IT consulting,
- have an overview about consulting companies,
- know concrete consulting examples,
- have experienced how effective teams work and
- have got an insight into the professional field "consulting".

Organizational issues

Die Teilnehmeranzahl ist limitiert. Eine Anmeldung per Mail an sekretariat.boehm@ipd.kit.edu ist erforderlich.



Die Veranstaltung findet komplett online statt. Link zur Veranstaltung: <https://i40meet.ipd.kit.edu/pdub>




T

5.62 Course: Context Sensitive Systems [T-INFO-107499]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: [M-INFO-100728 - Context Sensitive Systems](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|--------------|---|-------|--|---------------|
| ST 2021 | 2400099 | Context Sensitive Systems | 1 SWS | Practice /  | Riedel |
| ST 2021 | 24658 | Context Sensitive Systems | 2 SWS | Lecture /  | Riedel, Beigl |
| Exams | | | | | |
| WT 20/21 | 7500054_0128 | Context Sensitive Systems | | | Riedel, Beigl |
| WT 20/21 | 7500054_0506 | Context Sensitive Systems | | | Riedel, Beigl |
| ST 2021 | 7500149 | Context Sensitive Systems | | | Beigl, Riedel |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.63 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 |

| Events | | | | | |
|---------|---------|----------------------------------|-------|-----------|-------|
| ST 2021 | 2550120 | Konvexe Analysis | 2 SWS | Lecture / | 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 lecture is offered irregularly. The curriculum of the next three years is available online (www.ior.kit.edu).

Below you will find excerpts from events related to this course:

V

Konvexe Analysis

2550120, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

Convex Analysis deals with properties of convex functions and convex sets, amongst others with respect to the minimization of convex functions over convex sets. That the involved functions are not necessarily assumed to be differentiable allows a number of applications which are not covered by techniques from smooth optimization, e.g. approximation problems with respect to the Manhattan or maximum norms, classification problems or the theory of statistical estimates. The lecture develops along another, geometrically intuitive example, where a nonsmooth obstacle set is to be described by a single smooth convex constraint such that minimal and maximal distances to the obstacle can be computed. The lecture is structured as follows:

- Introduction to entropic smoothing and convexity
- Global error bounds
- Smoothness properties of convex functions
- The convex subdifferential
- Global Lipschitz continuity
- Descent directions and stationarity conditions

Remark:

Prior to the attendance of this lecture, it is strongly recommended to acquire basic knowledge on optimization problems in one of the lectures "Global Optimization I and II" and "Nonlinear Optimization I and II".

Learning objectives:

The student

- knows and understands the fundamentals of convex analysis,
- is able to choose, design and apply modern techniques of convex analysis in practice.

Literature


- J. Borwein, A. Lewis, Convex Analysis and Nonlinear Optimization: Theory and Examples (2 ed.), Springer, 2006
- S. Boyd, L. Vandenberghe, Convex Optimization, Cambridge University Press, 2004
- O. Güler, Foundations of Optimization, Springer, 2010
- J.-B. Hiriart-Urruty, C. Lemarechal, Fundamentals of Convex Analysis, Springer, 2001
- B. Mordukhovich, N.M. Nam, An Easy Path to Convex Analysis and Applications, Morgan & Claypool Publishers, 2014
- R.T. Rockafellar, Convex Analysis, Princeton University Press, 1970
- R.T. Rockafellar, R.J.B. Wets, Variational Analysis, Springer, Berlin, 1998





T

5.64 Course: Copyright [T-INFO-101308]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [M-INFO-101215 - Intellectual Property Law](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|----------|---------|---------------------------|-------|---|--------------|
| WT 20/21 | 24121 | Copyright | 2 SWS | Lecture /  | Dreier |
| Exams | | | | | |
| WT 20/21 | 7500064 | Copyright | | | Dreier, Matz |


Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled




T

5.65 Course: Corporate Compliance [T-INFO-101288]

Responsible: Andreas Herzig
Organisation: KIT Department of Informatics
Part of: [M-INFO-101242 - Governance, Risk & Compliance](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|--------------------------------------|-------|---|--------------|
| WT 20/21 | 2400087 | Corporate Compliance | 2 SWS | Lecture /  | Herzig |
| Exams | | | | | |
| WT 20/21 | 7500063 | Corporate Compliance | | | Dreier, Matz |



Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled





T

5.66 Course: Corporate Financial Policy [T-WIWI-102622]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)
[M-WIWI-101502 - Economic Theory and its Application in Finance](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|---|-------|--|---------------|
| ST 2021 | 2530214 | Corporate Financial Policy | 2 SWS | Lecture /  | Ruckes |
| ST 2021 | 2530215 | Übungen zu Corporate Finance Policy | 1 SWS | Practice /  | Ruckes, Hoang |
| Exams | | | | | |
| WT 20/21 | 7900058 | Corporate Financial Policy | | | 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

Below you will find excerpts from events related to this course:

V

Corporate Financial Policy

2530214, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Literature**Weiterführende Literatur**

Tirole, J. (2006): The Theory of Corporate Finance. Princeton University Press.

T

5.67 Course: Corporate Risk Management [T-WIWI-109050]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)
[M-WIWI-101502 - Economic Theory and its Application in Finance](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Exams | | | |
|----------|---------|---|--------|
| WT 20/21 | 7900136 | Corporate Risk Management | Ruckes |

Competence Certificate

Please note that the lecture will not be offered in summer semester 2020.

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. The exam is offered each semester. If there are only a small number of participants registered for the exam, we reserve the right to hold an oral examination instead of a written one.

Prerequisites

None

Recommendation

None

Annotation

The course will exceptionally be held in the winter semester 2019/2020. Usually, however, the event takes place as a block course in the summer semester.

T

5.68 Course: Credit Risk [T-WIWI-102645]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|-----------------|---------|
| Written examination | 4,5 | Grade to a third | see Annotations | 1 |

Competence Certificate

The examination is offered for first-time writers for the last time in the winter semester 2020/21 and (only) for repeaters in the summer semester 2021.

The assessment consists of a written exam (75 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. The examination is offered every semester and can be repeated at every regular examination date.

A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites

None

Recommendation

Knowledge from the course "Derivatives" is very helpful.

Annotation

The course will no longer be offered from winter semester 2020/21.

T

5.69 Course: Critical Information Infrastructures [T-WIWI-109248]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104403 - Critical Digital Infrastructures](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 4 |

| Events | | | | | |
|----------|---------|---|-------|--------------|------------------------|
| WT 20/21 | 2511400 | Critical Information Infrastructures | 2 SWS | Lecture / 📱 | Sunyaev, Dehling, Lins |
| WT 20/21 | 2511401 | Exercises to Critical Information Infrastructures | 1 SWS | Practice / 📱 | Sunyaev, Dehling, Lins |
| Exams | | | | | |
| WT 20/21 | 7900067 | Critical Information Infrastructures | | | Sunyaev |
| ST 2021 | 7900061 | Critical Information Infrastructures | | | Sunyaev |

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

Competence Certificate

The alternative exam assessment consists of

- the preparation of a written elaboration as well as
- an oral examination as part of a presentation of the work.

Details of the grades will be announced at the beginning of the course.

The examination is only offered to first-time students in the winter semester, but can be repeated in the following summer semester.

Prerequisites

None.

Annotation

New lecture from winter semester 2018/2019.

Below you will find excerpts from events related to this course:

V

Critical Information Infrastructures

2511400, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

The course critical information infrastructures (CII) introduces students to the world of complex sociotechnical systems that permeate societies on a global scale. Students will learn to handle the complexities involved in the design, development, operation, and evaluation of critical information infrastructures. In the beginning of the course, critical information infrastructures will be introduced on a general level.

The following sessions will focus on an in-depth exploration of selected cases that represent current challenges in research and practice. Students will work (in a group of 4) on a selected topic and have to write a course paper. Students can choose a topic from a variety of topics. To answer the research questions, students can use literature reviews but also interviews, surveys, programming tasks, and other research methods.

There will be a short introduction to the topics for the course paper in the following topic areas. In addition, it will be possible to propose your own topics as a group in the topic areas:

- Distributed Ledger Technology
- Internet of Things / Edge and Fog Computing
- Cloud Computing
- Health Information Infrastructures
- Information Privacy
- Certification of Critical IT-Services

Since we offer topics in this course that also correspond to the research interests in our research group, there may be the opportunity to work on the topics in more depth in the course of a final thesis.

Learning objectives:

Students know concepts and technologies relevant for the design and reliable operation of critical information infrastructures and can leverage them to develop solutions for real-world challenges.

Notes:

The number of participants is limited to 24 students. Please register via the WiWi portal: <https://portal.wiwi.kit.edu/ys/3853>

The registration will be opened from September 1, 2020 until October 12, 2020.

Please make sure that you are available at the following dates if you want to take the course:

- 11.2020, 11:30 am–01:00 pm: 1. Foundations of Critical Information Infrastructures
- 11.2020, 11:30 am–01:00 pm: 2. Topic Area Presentation
- 11.2020, 11:30 am–01:00 pm: 3. Critical Information Infrastructure Landscape
- 11.2020, 11:30 am–01:00 pm: 4. Research on Information Systems & Group Assignment
- 12.2020, 10:00 am–04:00 pm: Interim Presentation
- 02.2021, 10:00 am–04:00 pm: Final Presentation

Further information on the course structure will be announced in the first session. Depending on the number of participants the individual sessions can have a shorter duration.

The meetings will take place online via MS Teams. We will provide a link to join the team if your registration was approved.

If you have any questions regarding course registration, please contact lins@kit.edu or dehling@kit.edu

Organizational issues

Bitte beachten Sie die geänderte Terminplanung. Die Vorlesung wird als Blockveranstaltung durchgeführt.

Literature


Dehling T., Lins S., Sunyaev A. (2019) Security of Critical Information Infrastructures. In: Reuter C. (eds) Information Technology for Peace and Security. Springer Vieweg, Wiesbaden. https://doi.org/10.1007/978-3-658-25652-4_15




T

5.70 Course: Cryptographic Voting Schemes [T-INFO-101279]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: [M-INFO-101198 - Advanced Topics in Cryptography](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------|---------|
| Oral examination | 3 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|-------------------------------|
| WT 20/21 | 2400122 | Cryptographic Voting Schemes | 2 SWS | Lecture /  | Müller-Quade, Schwerdt, Dörre |
| Exams | | | | | |
| WT 20/21 | 7500091 | Cryptographic Voting Schemes | | | Geiselman, Müller-Quade |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Below you will find excerpts from events related to this course:

V

Cryptographic Voting Schemes

2400122, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

T

5.71 Course: Current Directions in Consumer Psychology [T-WIWI-111100]

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-105312 - Marketing and Sales Management](#)

| Type | Credits | Grading scale | Recurrence | Expansion | Version |
|-----------------------------|---------|------------------|------------|-----------|---------|
| Examination of another type | 3 | Grade to a third | Once | 1 terms | 1 |

| Events | | | | | |
|----------|---------|---|-----------------|-------------------|-------------------|
| WT 20/21 | 2540441 | Current Directions in Consumer Psychology | 2 SWS | Others (sons / 🔄) | Scheibehenne |
| ST 2021 | 2540441 | Current Directions in Consumer Psychology | 2 (Blocked) SWS | Others (sons / 📱) | Scheibehenne, Liu |
| Exams | | | | | |
| WT 20/21 | 7900361 | Current Directions in Consumer Psychology | | | Scheibehenne |

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

Competence Certificate

Non exam assessment. Grading will be based on a continuous basis throughout the semester.

Prerequisites

Strong Interest in Original Research.

Below you will find excerpts from events related to this course:

V

Current Directions in Consumer Psychology

2540441, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Others (sonst.)
Blended (On-Site/Online)

Content

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

bei unter 6 Teilnehmer*innen in Präsenz am Institut, sonst online

V

Current Directions in Consumer Psychology

2540441, SS 2021, 2 (Blocked) SWS, Language: English, [Open in study portal](#)

Others (sonst.)
Online

Content

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.

T

5.72 Course: Current Issues in Innovation Management [T-WIWI-102873]

Responsible: Prof. Dr. Marion Weissenberger-Eibl
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Irregular | 1 |

Competence Certificate

Non exam assessment (following §4(2) 3 of the examination regulation).

Prerequisites

None

Recommendation

None

Annotation


Please note that the seminars we offer vary from semester to semester. Information about the currently offered seminars can be found in the Wiwi-Portal and on the iTM Website.




T

5.73 Course: Data and Storage Management [T-INFO-101276]

Responsible: Prof. Dr. Bernhard Neumair
Organisation: KIT Department of Informatics
Part of: [M-INFO-101210 - Dynamic IT-Infrastructures](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 4 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|---------|
| WT 20/21 | 24074 | Data and Storage Management | 2 SWS | Lecture /  | Neumair |
| Exams | | | | | |
| WT 20/21 | 7500112 | Data and Storage Management | | | Neumair |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.74 Course: Data Mining and Applications [T-WIWI-103066]

Responsible: Rheza Nakhaeizadeh
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101638 - Econometrics and Statistics I](#)
[M-WIWI-101639 - Econometrics and Statistics II](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|-----------------|---------|
| Oral examination | 4,5 | Grade to a third | see Annotations | 2 |

| Events | | | | | |
|---------|---------|--|-------|-----------|--------------|
| ST 2021 | 2520375 | Data Mining and Applications | 2 SWS | Lecture / | Nakhaeizadeh |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

The course will be held for the last time in the summer semester 2021. The last exam opportunity for first-timers will be in the summer semester 2021. A last exam opportunity (for repeaters only) will be offered in the winter semester 2021/2022.

- Conduction of a larger empirical study in groups
- reporting of milestones
- final presentation (app. 45 minutes)

Prerequisites

None

Annotation

The course will be held for the last time in the summer semester of 2021.

Below you will find excerpts from events related to this course:

V

Data Mining and Applications

2520375, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content**Learning objectives:**

Students

- know the definition of Data Mining
- are familiar with the CRISP-DM
- are familiar with the most important Data Mining Algorithms like Decision Tree, K-Means, Artificial Neural Networks, Association Rules, Regression Analysis
- will be able to use a DM-Tool

Content:

Part one: Data Mining:

What is Data Mining?; History of Data Mining; Conferences and Journals on Data Mining; Potential Applications; Data Mining Process; Business Understanding; Data Understanding; Data Preparation; Modeling; Evaluation; Deployment; Interdisciplinary aspects of Data Mining; Data Mining tasks; Data Mining Algorithms (Decision Trees, Association Rules, Regression, Clustering, Neural Networks); Fuzzy Mining; OLAP and Data Warehouse; Data Mining Tools; Trends in Data Mining

Part two: Examples of application of Data Mining

Success parameters of Data Mining Projects; Application in industry; Application in Commerce

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Exam preparation: 40 hours

Organizational issues

Blockveranstaltung, Termine werden über ILIAS bekannt gegeben

Literature

U. Fayyad, G. Piatetsky-Shapiro, P. Smyth, R. Uthurusamy, editors, *Advances in Knowledge Discovery and Data Mining*, AAAI/MIT Press, 1996 (order online from Amazon.com or from MIT Press).

Jiawei Han, Micheline Kamber, *Data Mining : Concepts and Techniques*, 2nd edition, Morgan Kaufmann, ISBN 1558609016 , 2006.

David J. Hand, Heikki Mannila and Padhraic Smyth, *Principles of Data Mining* , MIT Press, Fall 2000

Trevor Hastie, Robert Tibshirani, Jerome Friedman, *The Elements of Statistical Learning: Data Mining, Inference, and Prediction*, Springer Verlag, 2001.

Pang-Ning Tan, Michael Steinbach, Vipin Kumar, *Introduction to Data Mining*, Pearson Addison wesley (May, 2005). Hardcover: 769 pages. ISBN: 0321321367

Ripley, B.D. (1996) *Pattern Recognition and Neural Networks*, Cambridge: Cambridge University Press.

Ian Witten and Eibe Frank, *Data Mining: Practical Machine Learning Tools and Techniques*, 2nd Edition, Morgan Kaufmann, ISBN 0120884070 , 2005.

T

5.75 Course: Data Privacy: From Anonymization to Access Control [T-INFO-108377]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101208 - Innovative Concepts of Data and Information Management](#)
[M-INFO-101256 - Theory and Practice of Data Warehousing and Mining](#)
[M-INFO-104045 - Data Privacy: From Anonymization to Access Control](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 3 | Grade to a third | Irregular | 1 |

T

5.76 Course: Data Protection by Design [T-INFO-108405]

Responsible: apl. Prof. Dr. Oliver Raabe
Organisation: KIT Department of Informatics
Part of: [M-INFO-101242 - Governance, Risk & Compliance](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 3 | Grade to a third | Irregular | 2 |


| Exams | | | |
|----------|---------|---|-------|
| WT 20/21 | 7500071 | Data Protection by Design | Raabe |



T

5.77 Course: Data Protection Law [T-INFO-101303]

Responsible: Dr. Johannes Eichenhofer
Organisation: KIT Department of Informatics
Part of: [M-INFO-101217 - Public Business Law](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|-------------------------------------|-------|---|-------------|
| WT 20/21 | 24018 | Datenschutzrecht | 2 SWS | Lecture /  | Eichenhofer |
| Exams | | | | | |
| WT 20/21 | 7500162 | Data Protection Law | | | Eichenhofer |



Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.78 Course: Database Systems [T-INFO-101497]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101178 - Communication and Database Systems](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|---|-------|--|-------------|
| ST 2021 | 24516 | Datenbanksysteme | 2 SWS | Lecture /  | Böhm, Mülle |
| ST 2021 | 24522 | Übungen zu Datenbanksysteme | 1 SWS | Practice /  | Böhm, Mülle |
| Exams | | | | | |
| WT 20/21 | 7500189 | Database Systems | | | Böhm |
| ST 2021 | 7500166 | Database Systems | | | Böhm |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**5.79 Course: Database Systems and XML [T-WIWI-102661]**

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101456 - Intelligent Systems and Services](#)
[M-WIWI-101477 - Development of Business Information Systems](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|----------|---------|--|-------|------------|---|
| WT 20/21 | 2511202 | Database Systems and XML | 2 SWS | Lecture / | Oberweis |
| WT 20/21 | 2511203 | Exercises Database Systems and XML | 1 SWS | Practice / | Oberweis, Frister, Forell, Schreiber, Fritsch |
| Exams | | | | | |
| WT 20/21 | 7900007 | Database Systems and XML (Registration until 08 February 2021) | | | Oberweis |
| ST 2021 | 7900046 | Database Systems and XML (Registration until 12 July 2021) | | | Oberweis |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

In winter term 2020/21, the exam takes place as an online exam. A trial online exam is scheduled for Feb. 10, 2021 at 5 p.m.

Prerequisites

None

Below you will find excerpts from events related to this course:

**Database Systems and XML**

2511202, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)
Online**

Content

Databases are a proven technology for managing large amounts of data. The oldest database model, the hierarchical model, was replaced by different models such as the relational or the object-oriented data model. The hierarchical model became particularly more important with the emergence of the extensible Markup Language XML. XML is a data format for structured, semi-structured, and unstructured data. In order to store XML documents consistently and reliably, databases or extensions of existing data base systems are required. Among other things, this lecture covers the data model of XML, concepts of XML query languages, aspects of storage of XML documents, and XML-oriented database systems.

Learning objectives:

Students

- know the basics of XML and generate XML documents,
- are able to use XML database systems and to formulate queries to XML documents,
- know to assess the use of XML in operational practice in different application contexts.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

Literature

- M. Klettke, H. Meyer: XML & Datenbanken: Konzepte, Sprachen und Systeme. dpunkt.verlag 2003
- H. Schöning: XML und Datenbanken: Konzepte und Systeme. Carl Hanser Verlag 2003
- W. Kazakos, A. Schmidt, P. Tomchuk: 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

5.80 Course: Datamanagement in the Cloud [T-INFO-101306]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-100769 - Datamanagement in the Cloud](#)
[M-INFO-101208 - Innovative Concepts of Data and Information Management](#)
[M-INFO-101256 - Theory and Practice of Data Warehousing and Mining](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------|---------|
| Oral examination | 5 | Grade to a third | Irregular | 1 |

Prerequisites


none





T

5.81 Course: Deep Learning and Neural Networks [T-INFO-109124]

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: [M-INFO-104460 - Deep Learning and Neural Networks](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 6 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|--------------|
| ST 2021 | 2400024 | Deep Learning and Neural Networks | 4 SWS | Lecture /  | Waibel, Pham |
| Exams | | | | | |
| WT 20/21 | 7500259 | Nachklausur Deep Learning and Neural Networks | | | Waibel |
| WT 20/21 | 7500297 | Deep Learning and Neural Networks (Nachklausur) | | | Waibel |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T 5.82 Course: Deep Learning for Computer Vision [T-INFO-109796]

Responsible: Prof. Dr.-Ing. Rainer Stiefelhagen
Organisation: KIT Department of Informatics
Part of: [M-INFO-101239 - Machine Vision](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|----------|---|-------|--------------|-----------------------|
| WT 20/21 | 80020304 | Deep Learning für Computer Vision (Nachklausur) | | Written exam | Stiefelhagen |
| ST 2021 | 24628 | Deep Learning for Computer Vision | 2 SWS | Lecture / 📱 | Stiefelhagen, Sarfraz |
| Exams | | | | | |
| WT 20/21 | 7500045 | Content-based Image and Video Retrieval | | | Stiefelhagen |
| ST 2021 | 7500024 | Deep Learning for Computer Vision | | | Stiefelhagen |

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✖ Cancelled

Recommendation

Basic knowledge of pattern recognition as taught in the module Cognitive Systems, is expected.

Annotation

The course is partially given in German and English.

Below you will find excerpts from events related to this course:

V Deep Learning for Computer Vision **Lecture (V)
Online**
 24628, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Content

In recent years tremendous progress has been made in analysing and understanding image and video content. The dominant approach in Computer Vision today are deep learning approaches, in particular the usage of Convolutional Neural Networks.

The lecture introduces the basics, as well as advanced aspects of deep learning methods and their application for a number of computer vision tasks. The following topics will be addressed in the lecture:

- Introduction to Deep Learning
- Convolutional Neural Networks (CNN): Background
- CNNs: basic architectures and learning algorithms
- Object Recognition with CNN
- Image Segmentation with CNN
- Recurrent Neural Networks
- Generating image descriptions (Image Captioning)
- Automatic question answering (Visual Question Answering)
- Generative Adversarial Networks (GAN) and their applications
- Deep Learning platforms and tools

T

5.83 Course: Demand-Driven Supply Chain Planning [T-WIWI-110971]

Responsible: Josef Packowski
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-102805 - Service Operations](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Exams | | | |
|----------|---------|---|-----------|
| WT 20/21 | 7900293 | Demand-Driven Supply Chain Planning | Packowski |

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


5.84 Course: Deployment of Database Systems [T-INFO-101317]





Responsible: Prof. Dr.-Ing. Klemens Böhm

Organisation: KIT Department of Informatics

Part of: [M-INFO-100780 - Deployment of Database Systems](#)
[M-INFO-101208 - Innovative Concepts of Data and Information Management](#)
[M-INFO-101256 - Theory and Practice of Data Warehousing and Mining](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|------|
| WT 20/21 | 2400020 | Datenbankeinsatz | 3 SWS | Lecture /  | Böhm |
| Exams | | | | | |
| WT 20/21 | 7500007 | Deployment of Database Systems | | | Böhm |
| ST 2021 | 7500090 | Deployment of Database Systems | | | Böhm |



Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.85 Course: Derivatives [T-WIWI-102643]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101482 - Finance 1](#)
[M-WIWI-101483 - Finance 2](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|-----------------------------------|-------|--|---------------------|
| ST 2021 | 2530550 | Derivatives | 2 SWS | Lecture /  | Uhrig-Homburg |
| ST 2021 | 2530551 | Übung zu Derivate | 1 SWS | Practice /  | Uhrig-Homburg, Eska |
| Exams | | | | | |
| WT 20/21 | 7900051 | Derivatives | | | Uhrig-Homburg |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Depending on further pandemic developments, the examination will be offered in the summer semester 2021 either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites

None

Recommendation

None

Below you will find excerpts from events related to this course:

V

Derivatives

2530550, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Organizational issues

Veranstaltungskonzept umfasst vollständige Aufzeichnungen von Vorlesung und Übung. Ergänzend bieten wir zweiwöchig freiwillige Live-Fragerunden zum fachlichen und organisatorischen Austausch an.

Literature

- Hull (2012): Options, Futures, & Other Derivatives, Prentice Hall, 8th Edition

Weiterführende Literatur:



Cox/Rubinstein (1985): Option Markets, Prentice Hall





T

5.86 Course: Design Thinking [T-WIWI-102866]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101507 - Innovation Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|---------------------------------|
| WT 20/21 | 2545008 | Design Thinking (Track 1) | 2 SWS | Seminar /  | Abraham, Manthey, Terzidis |
| ST 2021 | 2545008 | Design Thinking (Track 1) | 2 SWS | Seminar /  | González, Abraham, Csernalabics |
| Exams | | | | | |
| WT 20/21 | 7900084 | Design Thinking (Track 1) | | | Terzidis |
| ST 2021 | 7900053 | Design Thinking (Track 1) | | | Terzidis |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Alternative exam assessments (§4(2), 3 SPO).

Prerequisites

None

Recommendation

None

Annotation

The seminar content will be published on the website of the institute.

Below you will find excerpts from events related to this course:

V

Design Thinking (Track 1)

2545008, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)
Online**

Content

Design Thinking is a user-centric innovation management method. The iterative process first analyzes the problem space and builds a sound understanding of the future users. Subsequently, ideas for the solution are generated, prototypes are created and tested by the user group. The result is a proven and validated product.

Learning goals:

During the seminar, the students learn basic procedures for achieving user-centric innovations. These are concrete methods that start with the potential user of certain products and services. The method is problem-oriented and emphasizes the specific customer situation. After attending the seminar, the students have a clear understanding of the need to explore end-user needs and are able to independently apply the methods of Design Thinking for developing market-driven innovations at a basic level.

Credentials:

Registration is via the Wiwi portal.

ATTENTION: Creditability in the seminar module: The seminar is NOT credited in the seminar module! Crediting is only possible in the EXPERT MODULE ENTREPRENEURSHIP.

T

5.87 Course: Designing Interactive Systems [T-WIWI-110851]

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](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|---|-------|-----------|-----------------|
| ST 2021 | 2540558 | Designing Interactive Systems | 3 SWS | Lecture / | Mädche, Gnewuch |
| Exams | | | | | |
| WT 20/21 | 7900228 | Designing Interactive Systems | | | Mädche |
| ST 2021 | 00009 | Designing Interactive Systems | | | 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

Annotation

This course replaces T-WIWI-108461 "Interactive Information Systems" starting summer term 2020.

The course is held in english.

Below you will find excerpts from events related to this course:

V

Designing Interactive Systems

2540558, SS 2021, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content**Description**

Computers have evolved from batch processors towards highly interactive systems. This offers new possibilities but also challenges for the successful design of the interaction between human and computer. Interactive systems are socio-technical systems in which users perform tasks by interacting with technology in a specific context in order to achieve specified goals and outcomes.

The aim of this course is to introduce advanced concepts and theories, interaction technologies as well as current practice of contemporary interactive systems.

The course is complemented with a design capstone project, where students in a team select and apply design methods & techniques in order to create an interactive prototype

Learning objectives

- Get an advanced understanding of conceptual foundations of interactive systems from a human and computer perspective
- explore the theoretical grounding of Interactive Systems leveraging theories from reference disciplines such as psychology
- know specific design principles for the design of advanced interactive systems
- get hands-on experience in conceptualizing and designing advanced Interactive Systems to solve a real-world challenge from an industry partner by applying the lecture contents.

Prerequisites

No specific prerequisites are required for the lecture

Literature

Die Vorlesung basiert zu einem großen Teil auf

• Benyon, D. (2014). Designing interactive systems: A comprehensive guide to HCI, UX and interaction design (3. ed.). Harlow: Pearson.

Weiterführende Literatur wird in der Vorlesung bereitgestellt.

T

5.88 Course: Developing Business Models for the Semantic Web [T-WIWI-102851]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Irregular | 1 |

Competence Certificate

Alternative exam assessments.

Prerequisites

None

Recommendation


As a recommendation to attending the seminar, basic knowledge about semantic technologies and concepts should be available. This may be acquired by attending one of the following lectures – Wissensmanagement, Semantic Web Technologies 1, Semantic Web Technologies 2 or by studying related literature. Furthermore the topic entrepreneurship should be of interest.


T

5.89 Course: Digital Circuits Design [T-INFO-103469]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: [M-INFO-102978 - Digital Circuits Design](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 6 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|-----------------------|
| ST 2021 | 24007 | Digital Circuits Design | 3 SWS | Lecture /  | Tahoori |
| Exams | | | | | |
| WT 20/21 | 7500254 | Digital Circuits Design | | | Henkel, Karl, Tahoori |
| ST 2021 | 7500254 | Digital Circuits Design | | | Henkel, Karl, Tahoori |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.90 Course: Digital Health [T-WIWI-109246]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104403 - Critical Digital Infrastructures](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 3 |

| Events | | | | | |
|----------|---------|--------------------------------|-------|-----------|-------------------------------------|
| WT 20/21 | 2511402 | Digital Health | 2 SWS | Lecture / | Sunyaev, Thiebes, Schmidt-Kraepelin |
| Exams | | | | | |
| WT 20/21 | 7900068 | Digital Health | | | Sunyaev |
| ST 2021 | 7900062 | Digital Health | | | Sunyaev |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

Alternative exam assessment (written elaboration, presentation, peer review, oral participation) according to §4(2),3 of the examination regulation. Details of the grading will be announced at the beginning of the course. The examination is only offered to first-time writers in the winter semester, but can be repeated in the following summer semester.

Prerequisites

None.

Below you will find excerpts from events related to this course:

V

Digital Health

2511402, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

Lecture (V)
Online

Content

The master course **Digital Health** introduces master students to the subject of **digitization in health care**. Students will learn about the theoretical foundations and practical implications of various topics surrounding the digitization in health care, including health information systems, telematics, big health care data, and patient-centered health care.

After an introduction to the challenge of digitization in health care, the following sessions will focus on an in-depth exploration of selected cases that represent current challenges in research and practice. Students will work (in a group of 3-4) on a selected topic and have to write a course paper. Students can choose a topic from a variety of topics. To answer the research questions, students can use literature reviews but also interviews, surveys, programming tasks, and other research methods are possible.

There will be a short introduction to the topics for the course paper in the following topic areas. In addition, it will be possible to propose your own topics as a group in the topic areas:

- **Mobile Health (mHealth) / Gamification**
- **Distributed Ledger Technology / Blockchain**
- **Artificial Intelligence / Machine Learning**
- **Genomics / Biomedical Data**

Since we offer topics in this course that also correspond to the research interests in our research group, there may be the opportunity to work on the topics in more depth in the course of a final thesis.

Learning objectives:

Students know about the challenges of digitization in health care and can leverage relevant concepts and technologies to address these challenges. Students learn to work in teams and critically discuss digital health topics with fellow students, researchers, and practitioners.

Notes:

The number of participants is limited to 24 students. Please register here: <https://portal.wiwi.kit.edu/ys/3897>

The registration will be opened from September 11, 2020 until October 12, 2020.

Please make sure that you are available at the following dates if you want to take the course:

- 05.11.2020, 16:00–17:30 - 1. Introduction to Digital Health
- 12.11.2020, 16:00–17:30 - 2. Topic Area Presentation #1
- 19.11.2020, 16:00–17:30 - 3. Topic Area Presentation #2
- 26.11.2020, 16:00–17:30 - 4. Guest Lectures
- 25.02.2021, 10:00–17:00 - Final Presentation

Further information on the course structure will be announced in the first session. Depending on the number of participants the individual sessions can have a shorter duration.

The meetings will take place **online via MS Teams**. We will provide a link to join the team if your registration was approved.

If you have any questions regarding course registration, please contact scott.thiebes@kit.edu or manuel.schmidt-kraepelin@kit.edu

Workload:

4,5 ECTS = approx. 135 hours.

Organizational issues

Bitte beachten Sie die geänderte Terminplanung und das geänderte Anmeldeverfahren (<https://portal.wiwi.kit.edu/ys/3897>)

T

5.91 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](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 1,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|--|-------|--|-----------|
| ST 2021 | 2571156 | Digital Marketing and Sales in B2B | 1 SWS | Others (sons /  | Konhäuser |

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

Participation requires an application. The application period starts at the beginning of the semester. More information can be obtained on the website of the research group Marketing and Sales (marketing.iism.kit.edu). Access to this course is restricted. Typically all students will be granted the attendance of one course with 1.5 ECTS. Nevertheless attendance can not be guaranteed. For further information please contact Marketing and Sales Research Group (marketing.iism.kit.edu). Please note that only one of the 1.5-ECTS courses can be attended in this module.

Below you will find excerpts from events related to this course:

V

Digital Marketing and Sales in B2B

2571156, SS 2021, 1 SWS, Language: English, [Open in study portal](#)

Others (sonst.)
Online

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

5.92 Course: Digital Services: Business Models and Transformation [T-WIWI-110280]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101448 - Service Management](#)
[M-WIWI-102754 - Service Economics and Management](#)
[M-WIWI-102808 - Digital Service Systems in Industry](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|--|-------|--|-------------------|
| WT 20/21 | 2595484 | Digital Services: Business Models and Transformation | 2 SWS | Lecture /  | Satzger, Schüritz |
| WT 20/21 | 2595485 | | 1 SWS | Practice /  | Enders, Schüritz |
| Exams | | | | | |
| WT 20/21 | 7900302 | Digital Services: Business Models and Transformation | | | Satzger |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment of this course is a written examination (60 min.) (following §4(2), 1 SPOs) and by submitting written papers as part of the exercise.

Prerequisites

None

Recommendation

None

Annotation

former name until winter semester 2019/2020: "Business and IT Service Management" (T-WIWI-102881)

Below you will find excerpts from events related to this course:

V

Digital Services: Business Models and Transformation

2595484, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

Digitalization fuels the trends towards a service-led economy and drives the emergence of innovative digital services, but also new service-oriented offerings of existing enterprises ("servitization"). In particular, the use of new data resources (e.g., sensor-based data in the Internet of Things) and analytical methods open up ample opportunities for new data-driven services and associated novel business models.

In this lecture, we systematically build the theoretical and practical foundations on how to adapt, create and transform business models around digital services – using a top-down approach: The first part of the lecture is devoted to *general service* theory, management and transformation as a base for digital service businesses. The second and third part of the lecture then further zoom in into the specifics of *digital service* and *data-based service* business models and their transformation. Throughout the lecture, we put a particular focus on service systems – elevating the service and business model perspective from individual enterprises to larger "(eco-)systems" or "platforms".

The lecture links theoretical content and current research to practical examples and exercises. Students are invited to actively engage in the discussion and contribute their knowledge. Invited guest speakers from industry as well as case studies ensure sufficient application orientation of this lecture.

Note: While the lecture builds upon aspects of the "Digital Service" lecture in the bachelor program, it is not mandatory for students to have participated in it.

Literature

Böhmman, T., Leimeister, J.M., Möslin, K. (2014). Service Systems Engineering, Business & Information Systems Engineering, 6(2), 73-79.

Cardoso et al. (2015). Fundamentals of Service Systems.

Hartmann P., Zaki M., Feldmann N., Neely A. (2016). Capturing value from big data - a taxonomy of data-driven business models used by start-up firms. IJPOR, 36(10), 1382-1406.

Schüritz R., Seebacher S., Satzger G., Schwartz L. (2017). Datatization as the Next Frontier of Servitization. Proceedings of International Conference on Information Systems 2017.

Vargo S., Lusch R. (2017). Service-dominant logic 2025. International Journal of Research in Marketing, 34(1), 46-67.

Weill, P., Woerner, S.L. (2018). What's your Digital Business Model? – Six Questions to Help you Build the Next-Generation Enterprise. Harvard Business Review Press.

Wirtz, B. (2019). Digital Business Models – Concepts, Models, and the Alphabet Case Study. Springer.

T

5.93 Course: Digital Signatures [T-INFO-101280]

Responsible: Prof. Dr. Dennis Hofheinz
Organisation: KIT Department of Informatics
Part of: [M-INFO-101198 - Advanced Topics in Cryptography](#)


| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 3 | Grade to a third | Each winter term | 1 |





T

5.94 Course: Digital Transformation and Business Models [T-WIWI-108875]

Responsible: Dr. Daniel Jeffrey Koch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|--|-------|---|------|
| ST 2021 | 2545103 | Digital Transformation and Business Models | 2 SWS | Seminar /  | Koch |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Non exam assessment (following §4(2) 3 of the examination regulation). The final grade is composed 75% of the grade of the written paper and 25% of the presentation.

Prerequisites

None

Recommendation

Prior attendance of the course Innovation Management is recommended.

Below you will find excerpts from events related to this course:

V

Digital Transformation and Business Models

Seminar (S)
Online

2545103, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Content

The seminar "Digital Transformation and Business Models" aims at the development of thematic aspects of digital transformation with simultaneous application of different business model methodologies. Established companies face the challenge of digital transformation. The digital transformation is particularly relevant for the business models of industrial enterprises. As part of innovation management, the examination of business model changes against the background of digital transformation is one of the main challenges facing the German economy. At the beginning, seminar topics will be assigned. These will be presented and discussed at the end of the seminar. In the first seminar date impulses to business model methodologies and the digital transformation take place, which are to be discussed then, in order to provide an understanding for the topic complex and to ensure the purposeful development of the seminar topics.

T

5.95 Course: Discrete-Event Simulation in Production and Logistics [T-WIWI-102718]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-102805 - Service Operations](#)
[M-WIWI-102832 - Operations Research in Supply Chain Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|--|-------|-----------|--------------|
| ST 2021 | 2550488 | Ereignisdiskrete Simulation in Produktion und Logistik | 3 SWS | Lecture / | 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 2021, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

Simulation of production and logistics systems is an interdisciplinary subject connecting expert knowledge from production management and operations research with mathematics/statistics as well as computer science and software engineering. With completion of this course, students know statistical foundations of discrete simulation, are able to classify and apply related software applications, and know the relation between simulation and optimization as well as a number of application examples. Furthermore, students are enabled to structure simulation studies and are aware of specific project scheduling issues.

Literature


- Banks J., Carson II J. S., Nelson B. L., Nicol D. M. (2010) Discrete-event system simulation, 5.Aufl., Pearson, Upper Saddle River.
- Eley, M. (2012): Simulation in der Logistik - Einführung in die Erstellung ereignisdiskreter Modelle unter Verwendung des Werkzeuges "Plant Simulation", Springer, Berlin und Heidelberg
- Kosturiak, J. und M. Gregor (1995): Simulation von Produktionssystemen. Springer, Wien und New York.
- Law, A. M. (2015): Simulation Modeling and Analysis. 5th Edition, McGraw-Hill, New York usw.
- Liebl, F. (1995): Simulation. 2. Auflage, Oldenbourg, München.
- Noche, B. und S. Wenzel (1991): Marktspiegel Simulationstechnik. In: Produktion und Logistik. TÜV Rheinland, Köln.
- Pidd, M. (2004): Computer Simulation in Management Science. 5th Edition, Wiley, Chichester.
- Robinson S (2004) Simulation: the practice of model development and use. John Wiley & Sons, Chichester
- VDI (2014): Simulation von Logistik-, Materialfluß- und Produktionssystemen. VDI Richtlinie 3633, Blatt 1, VDI-Verlag, Düsseldorf.





T

5.96 Course: Distributed Computing [T-INFO-101298]

Responsible: Prof. Dr. Achim Streit
Organisation: KIT Department of Informatics
Part of: [M-INFO-101210 - Dynamic IT-Infrastructures](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|----------|---------|---------------------------------------|-------|---|---------------------|
| WT 20/21 | 2400050 | Distributed Computing | 2 SWS | Lecture /  | Streit, Krauß, Kühn |
| Exams | | | | | |
| WT 20/21 | 7500172 | Distributed Computing | | | Streit |



Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled





T

5.97 Course: Dynamic Macroeconomics [T-WIWI-109194]

Responsible: Prof. Dr. Johannes Brumm
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101478 - Innovation and Growth](#)
[M-WIWI-101496 - Growth and Agglomeration](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---|-------|--|--------|
| WT 20/21 | 2560402 | Dynamic Macroeconomics | 2 SWS | Lecture /  | Brumm |
| WT 20/21 | 2560403 | Übung zu Dynamic Macroeconomics | 1 SWS | Practice /  | Krause |
| Exams | | | | | |
| WT 20/21 | 7900261 | Dynamic Macroeconomics | | | Brumm |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites

None.

Below you will find excerpts from events related to this course:

V

Dynamic Macroeconomics

2560402, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Literature


Literatur und Skripte werden in der Veranstaltung angegeben.



T

5.98 Course: Efficient Energy Systems and Electric Mobility [T-WIWI-102793]

Responsible: PD Dr. Patrick Jochem
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101452 - Energy Economics and Technology](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|----------|
| ST 2021 | 2581006 | Efficient Energy Systems and Electric Mobility | 2 SWS | Lecture /  | Jochem |
| Exams | | | | | |
| WT 20/21 | 7981006 | Efficient Energy Systems and Electric Mobility | | | 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 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

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

Freitag 09:00-11:15 Uhr

Literature

Wird in der Vorlesung bekanntgegeben.

T

5.99 Course: eFinance: Information Systems for Securities Trading [T-WIWI-110797]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101446 - Market Engineering](#)
[M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---|-------|--------------|----------------------|
| WT 20/21 | 2540454 | eFinance: Information Systems for Securities Trading | 2 SWS | Lecture / 📺 | Weinhardt, Notheisen |
| WT 20/21 | 2540455 | Übungen zu eFinance: Informationssysteme für den Wertpapierhandel | 1 SWS | Practice / 🔄 | Jaquart |
| Exams | | | | | |
| WT 20/21 | 7900182 | eFinance: Information Engineering and Management for Securities Trading | | | Weinhardt |
| WT 20/21 | 7900309 | eFinance: Information Systems for Securities Trading | | | Weinhardt |

Legend: 📺 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

Competence Certificate

Success is monitored by means of ongoing elaborations and presentations of tasks and an examination (60 minutes) at the end of the lecture period. The scoring scheme for the overall evaluation will be announced at the beginning of the course.

Prerequisites

see below

Annotation

The course "eFinance: Information Systems for Securities Trading" covers different actors and their function in the securities industry in-depth, highlighting key trends in modern financial markets, such as Distributed Ledger Technology, Sustainable Finance, and Artificial Intelligence. Security prices evolve through a large number of bilateral trades, performed by market participants that have specific, well-regulated and institutionalized roles. Market microstructure is the subfield of financial economics that studies the price formation process. This process is significantly impacted by regulation and driven by technological innovation. Using the lens of theoretical economic models, this course reviews insights concerning the strategic trading behaviour of individual market participants, and models are brought market data. Analytical tools and empirical methods of market microstructure help to understand many puzzling phenomena in securities markets.

Below you will find excerpts from events related to this course:

V

eFinance: Information Systems for Securities Trading

2540454, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

The course "eFinance: Information Systems for Securities Trading" covers different actors and their function in the securities industry in-depth, highlighting key trends in modern financial markets, such as Distributed Ledger Technology, Sustainable Finance, and Artificial Intelligence. Security prices evolve through a large number of bilateral trades, performed by market participants that have specific, well-regulated and institutionalized roles. Market microstructure is the subfield of financial economics that studies the price formation process. This process is significantly impacted by regulation and driven by technological innovation. Using the lens of theoretical economic models, this course reviews insights concerning the strategic trading behaviour of individual market participants, and models are brought market data. Analytical tools and empirical methods of market microstructure help to understand many puzzling phenomena in securities markets.

Literature

- Maureen O'Hara: Market Microstructure Theory (1997, Blackwell Publishing)
- Larry Harris: Trading and Exchanges – Market Microstructure for Practitioners (2004, Oxford University Press)

Further Literature



- Joel Hasbrouck: Empirical Market Microstructure (2007, Oxford University Press)
- Thierry Foucault, Marco Pagano, and Ailsa Roell: Market Liquidity: Theory, Evidence, and Policy (2013, Oxford University Press)





T

5.100 Course: Emerging Trends in Digital Health [T-WIWI-110144]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104403 - Critical Digital Infrastructures](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---------|---------|--|-------|---|------------------------|
| ST 2021 | 2513404 | Seminar Emerging Trends in Digital Health (Bachelor) | 2 SWS | Seminar /  | Lins, Sunyaev, Thiebes |
| ST 2021 | 2513405 | Seminar Emerging Trends in Digital Health (Master) | 2 SWS | Seminar /  | Lins, Sunyaev, Thiebes |
| Exams | | | | | |
| ST 2021 | 7900146 | Seminar Emerging Trends in Digital Health (Master) | | | 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

5.101 Course: Emerging Trends in Internet Technologies [T-WIWI-110143]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104403 - Critical Digital Infrastructures](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---------|---------|---|-------|---|------------------------|
| ST 2021 | 2513402 | Seminar Emerging Trends in Internet Technologies (Bachelor) | 2 SWS | Seminar /  | Sunyaev, Thiebes, Lins |
| ST 2021 | 2513403 | Seminar Emerging Trends in Internet Technologies (Master) | 2 SWS | Seminar /  | Lins, Sunyaev, Thiebes |
| Exams | | | | | |
| ST 2021 | 7900128 | Seminar Emerging Trends in Internet Technologies (Master) | | | 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

5.102 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 20/21 | 2581962 | Emissions into the Environment | 2 SWS | Lecture /  | Karl |
| Exams | | | | | |
| WT 20/21 | 7981962 | Emissions into the Environment | | | 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 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

Emission sources/emission monitoring/emission reduction: The lecture gives an overview of relevant emissions of air pollutants and greenhouse gases, emission monitoring and pollutant abatement options together with relevant legal regulations at national and international level. In addition, the fundamentals of circular economy, waste management and recycling are explained.

Structure:

Air pollution control

- Introduction, terms and definitions
- Sources of air pollutants
- Legal framework of air quality control
- Technical measures to reduce air pollutant emissions

Circular economy, recycling and waste management

- Waste collection and logistics
- Dual systems for packaging waste
- Recycling
- Thermal and biological waste treatment
- Final waste disposal

Literature


Wird in der Veranstaltung bekannt gegeben.





T

5.103 Course: Employment Law I [T-INFO-101329]

Responsible: Dr. Alexander Hoff
Organisation: KIT Department of Informatics
Part of: [M-INFO-101216 - Private Business Law](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|----------|---------|----------------------------------|-------|---|--------------|
| WT 20/21 | 24167 | Employment Law I | 2 SWS | Lecture /  | Hoff |
| Exams | | | | | |
| WT 20/21 | 7500040 | Employment Law I | | | Dreier, Matz |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.104 Course: Employment Law II [T-INFO-101330]

Responsible: Dr. Alexander Hoff
Organisation: KIT Department of Informatics
Part of: [M-INFO-101216 - Private Business Law](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 3 | Grade to a third | Each term | 1 |



| Exams | | | |
|----------|---------|-----------------------------------|--------------|
| WT 20/21 | 7500058 | Employment Law II | Dreier, Matz |





T

5.105 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 | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|---|-------|--|------------------------------------|
| ST 2021 | 2581003 | Energy and Environment | 2 SWS | Lecture /  | Karl |
| ST 2021 | 2581004 | Übungen zu Energie und Umwelt | 1 SWS | Practice /  | Fraunholz, Langenmayr, Fichtner |
| Exams | | | | | |
| WT 20/21 | 7981003 | Energy and Environment | | | Fichtner |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

Prerequisites

None.

Below you will find excerpts from events related to this course:

V

Energy and Environment

2581003, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

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

5.106 Course: Energy Market Engineering [T-WIWI-107501]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101446 - Market Engineering](#)
[M-WIWI-101451 - Energy Economics and Energy Markets](#)
[M-WIWI-103720 - eEnergy: Markets, Services and Systems](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|--|-------|--|----------------|
| ST 2021 | 2540464 | Energy Market Engineering | 2 SWS | Lecture /  | Staudt |
| ST 2021 | 2540465 | Übung zu Energy Market Engineering | 1 SWS | Practice /  | Staudt, Meinke |

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 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

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.
- Stoff 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

5.107 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 |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---|-------|------------|--------------|
| WT 20/21 | 2540494 | Energy Networks and Regulation | 2 SWS | Lecture / | Rogat, Huber |
| WT 20/21 | 2540495 | Übung zu Energy Networks and Regulation | 1 SWS | Practice / | Rogat |
| Exams | | | | | |
| WT 20/21 | 7900198 | Energy Networks and Regulation | | | Weinhardt |
| WT 20/21 | 7900236 | Energy Networks and Regulation | | | Weinhardt |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

The assessment consists of a written exam according to Section 4 (2), 1 of the examination regulation. The exam is offered every semester. Re-examinations are offered on every ordinary examination date.

Prerequisites

None

Recommendation

None

Annotation

Former course title until summer term 2017: T-WIWI-103131 "Regulatory Management and Grid Management - Economic Efficiency of Network Operation"

Below you will find excerpts from events related to this course:

V

Energy Networks and Regulation

2540494, WS 20/21, 2 SWS, [Open in study portal](#)

Lecture (V)
Online

Content**Learning Goals**

The student,

- understands the business model of a network operator and knows its central tasks in the energy supply system,
- has a holistic overview of the interrelationships in the network economy,
- understands the regulatory and business interactions,
- is in particular familiar with the current model of incentive regulation with its essential components and understands its implications for the decisions of a network operator
- is able to analyse and assess controversial issues from the perspective of different stakeholders.

Content of teaching

The lecture “Energy Networks and Regulation” provides insights into the regulatory framework of electricity and gas. It touches upon the way the grids are operated and how regulation affects almost all grid activities. The lecture also addresses approaches of grid companies to cope with regulation on a managerial level. We analyze how the system influences managerial decisions and strategies such as investment or maintenance. Furthermore, we discuss how the system affects the operator’s abilities to deal with the massive challenges lying ahead (“Energiewende”, redispatch, European grid integration, electric vehicles etc.). Finally, we look at current developments and major upcoming challenges, e.g., the smart meter rollout. Covered topics include:

- Grid operation as a heterogeneous landscape: big vs. small, urban vs. rural, TSO vs. DSO
- Objectives of regulation: Fair price calculation and high standard access conditions
- The functioning of incentive regulation
- First major amendment to the incentive regulation: its merits, its flaws
- The revenue cap and how it is adjusted according to certain exogenous factors
- Grid tariffs: How are they calculated, what is the underlying rationale, do we need a reform (and which)?
- Exogenous costs shifted (arbitrarily?) into the grid, e.g. feed-in tariffs for renewable energy or decentralized supply.

Literature

Averch, H.; Johnson, L.L (1962). Behavior of the firm under regulatory constraint, in: American Economic Review, 52 (5), S. 1052 – 1069.

Bundesnetzagentur (2006): Bericht der Bundesnetzagentur nach § 112a EnWG zur Einführung der Anreizregulierung nach § 21a EnWG, http://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Energie/Unternehmen_Institutionen/Netzentgelte/Anreizregulierung/BerichtEinfuehrgAnreizregulierung.pdf?__blob=publicationFile&v=3.

Bundesnetzagentur (2015): Evaluierungsbericht nach § 33 Anreizregulierungsverordnung, https://www.bmwi.de/Redaktion/DE/Downloads/A/anreizregulierungsverordnung-evaluierungsbericht.pdf?__blob=publicationFile&v=1.

Filippini, M.; Wild, J.; Luchsinger, C. (2001): Regulierung der Verteilnetzpreise zu Beginn der Marktöffnung. Erfahrungen in Norwegen und Schweden, Bundesamt für Energie, Bern, http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/34/066/34066585.pdf.

Gómez, T. (2013): Monopoly Regulation, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 151 – 198, Springer-Verlag, London.

Gómez, T. (2013): Electricity Distribution, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 199 – 250, Springer-Verlag, London.

Pérez-Arriaga, I.J. (2013): Challenges in Power Sector Regulation, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 647 – 678, Springer-Verlag, London.

Rivier, M.; Pérez-Arriaga, I.J.; Olmos, L. (2013): Electricity Transmission, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 251 – 340, Springer-Verlag, London.

T

5.108 Course: Energy Systems Analysis [T-WIWI-102830]

Responsible: Dr. Armin Ardone
Prof. Dr. Wolf Fichtner

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101452 - Energy Economics and Technology](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---|-------|-----------|------------------|
| WT 20/21 | 2581002 | Energy Systems Analysis | 2 SWS | Lecture / | Ardone, Fichtner |
| Exams | | | | | |
| WT 20/21 | 7981002 | Energy Systems Analysis | | | 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

Annotation

Since 2011 the lecture is offered in winter term. Exams can still be taken in summer term.

Below you will find excerpts from events related to this course:

V

Energy Systems Analysis

2581002, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

1. Overview and classification of energy systems modelling approaches
2. Usage of scenario techniques for energy systems analysis
3. Unit commitment of power plants
4. Interdependencies in energy economics
5. Scenario-based decision making in the energy sector
6. Visualisation and GIS techniques for decision support in the energy sector

Learning goals:

The student

- has the ability to understand and critically reflect the methods of energy system analysis, the possibilities of its application in the energy industry and the limits and weaknesses of this approach
- can use select methods of the energy system analysis by her-/himself

Literature**Weiterführende Literatur:**


- Möst, D. und Fichtner, W.: **Einführung zur Energiesystemanalyse**, in: Möst, D., Fichtner, W. und Grunwald, A. (Hrsg.): Energiesystemanalyse, Universitätsverlag Karlsruhe, 2009
- Möst, D.; Fichtner, W.; Grunwald, A. (Hrsg.): **Energiesystemanalyse** - Tagungsband des Workshops "Energiesystemanalyse" vom 27. November 2008 am KIT Zentrum Energie, Karlsruhe, Universitätsverlag Karlsruhe, 2009 [PDF: <http://digbib.ubka.uni-karlsruhe.de/volltexte/documents/928852>]



T

5.109 Course: Energy Trade and Risk Management [T-WIWI-102691]

Responsible: N.N.
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101451 - Energy Economics and Energy Markets](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|----------|---------|--|-------|---|----------------------------|
| ST 2021 | 2581020 | Energy Trade and Risk Management | 2 SWS | Lecture /  | Kraft, Fraunholz, Fichtner |
| Exams | | | | | |
| WT 20/21 | 7981020 | Energy Trade and Risk Management | | | 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

Energy Trade and Risk Management

2581020, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

1. Introduction to Markets, Mechanisms and Interaction
2. Electricity Trading (platforms, products, mechanisms)
3. Balancing Energy Markets and Congestion Management
4. Coal Markets (reserves, supply, demand, and transport)
5. Investments and Capacity Markets
6. Oil and Gas Markets (supply, demand, trade, and players)
7. Trading Game
8. Risk Management in Energy Trading

Organizational issues

Termine siehe Institutsaushang, freitags 14:00-15:30 Uhr

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

5.110 Course: Engineering FinTech Solutions [T-WIWI-106193]

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103247 - Intelligent Risk and Investment Advisory](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 9 | Grade to a third | Each term | 5 |

| Events | | | | | |
|----------|---------|--|--------|--------------------|--------|
| WT 20/21 | 2500020 | Engineering FinTech Solutions | 6 SWS | Practical course / | Ulrich |
| ST 2021 | 2530357 | Advanced Machine Learning and Data Science | 4 SWS | Practical course / | Ulrich |
| Exams | | | | | |
| WT 20/21 | 7900246 | Engineering FinTech Solutions | Ulrich | | |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

The assessment is carried out in form of a written thesis based on the course "Engineering FinTech Solutions".

Below you will find excerpts from events related to this course:

V

Engineering FinTech Solutions

2500020, WS 20/21, 6 SWS, Language: English, [Open in study portal](#)

Practical course (P)
Online

Content

This project invites students to either pursue their own FinTech innovation project or to contribute to the Chair's ongoing innovation projects. Students will learn to connect innovative financial research with modern information technology to build a prototype that solves some daunting tasks for professional end-users in the field of modern asset and risk management. The course is targeted to students with strong knowledge in the field of computational risk and asset management and strong programming skills. It offers students the opportunity to develop an algorithmic solution and hence ample their programming experience and their understanding of financial economics or asset and risk management.

Organizational issues

Termine werden bekannt gegeben

V

Advanced Machine Learning and Data Science

2530357, SS 2021, 4 SWS, Language: English, [Open in study portal](#)

Practical course (P)
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

14-tägig, tba


Literature





Literatur wird in der ersten Vorlesung bekannt gegeben.

T

5.111 Course: Engineering Interactive Systems [T-WIWI-110877]**Organisation:** KIT Department of Economics and Management**Part of:** M-WIWI-102806 - Service Innovation, Design & Engineering
M-WIWI-104080 - Designing Interactive Information Systems

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|--------|
| WT 20/21 | 2540420 | Engineering Interactive Systems | 3 SWS | Lecture /  | Mädche |
| Exams | | | | | |
| WT 20/21 | 7900210 | Engineering Interactive Systems | | | Mädche |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled**Competence Certificate**

Alternative exam assessment. The assessment consists of a one-hour exam and the implementation of a Capstone project. Details will be announced at the beginning of the course.

Prerequisites

None

Recommendation

None

Annotation

The course is held in English.

Below you will find excerpts from events related to this course:

V

Engineering Interactive Systems2540420, WS 20/21, 3 SWS, Language: English, [Open in study portal](#)Lecture (V)
On-Site**Literature**

Siehe Englische Literatur

T

5.112 Course: Entrepreneurial Leadership & Innovation Management [T-WIWI-102833]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101507 - Innovation Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Irregular | 3 |

Competence Certificate

Please note: The seminar cannot be offered in the winter semester 2019/2020 due to organizational reasons. Alternative exam assessment.

Prerequisites

None

Recommendation



None





T

5.113 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 | | | | | |
|----------|---------|----------------------------------|-------|---|----------|
| WT 20/21 | 2545001 | Entrepreneurship | 2 SWS | Lecture /  | Terzidis |
| ST 2021 | 2545001 | Entrepreneurship | 2 SWS | Lecture /  | Terzidis |
| Exams | | | | | |
| WT 20/21 | 7900045 | Entrepreneurship | | | Terzidis |
| WT 20/21 | 7900229 | Entrepreneurship | | | 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, WS 20/21, 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 (from 17.00-18.00), in which young and 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 consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The examination date is the 17th of december, 2 to 3 p.m. (Location will be the tent in front of the audimax).

Due to the current situation special regulations will be necessary. We will provide further information on our website.

Organizational issues

wöchentliche Videos: 26.10. - 7.12.

montags 16:30-17:00 Q&A, 17:00-18:00 Guest Talks

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)

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.

**Entrepreneurship**

2545001, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Literature

Füglistaller, Urs, Müller, Christoph und Volery, Thierry (2008): Entrepreneurship

Ries, Eric (2011): The Lean Startup


Osterwalder, Alexander (2010): Business Model Generation

T

5.114 Course: Entrepreneurship Research [T-WIWI-102894]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|---|-------|---|-------------------------|
| ST 2021 | 2545002 | Entrepreneurship Research | 2 SWS | Seminar /  | Henn, Manthey, Terzidis |
| Exams | | | | | |
| ST 2021 | 7900052 | Entrepreneurship Research | | | 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:

V

Entrepreneurship Research

2545002, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)
Online**

Organizational issues

Block am 21.04., 05.05., 14.07.

Literature


Wird im Seminar bekannt gegeben.




T

5.115 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 2021 | 2560548 | Environmental and Ressource Policy | 2 SWS | Lecture / Practice (/ ) | Walz |
| Exams | | | | | |
| WT 20/21 | 7900338 | Environmental and Resource Policy | | | Walz |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

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 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

Literature**Weiterführende Literatur:**


Michaelis, P.: *Ökonomische Instrumente in der Umweltpolitik. Eine anwendungsorientierte Einführung*, Heidelberg
 OECD: *Environmental Performance Review Germany*, Paris

T

5.116 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 20/21 | 2521547 | Umweltökonomik und Nachhaltigkeit (mit Übung) | 2 SWS | Lecture / Practice (/  | Walz |
| Exams | | | | | |
| WT 20/21 | 7900339 | Environmental Economics and Sustainability | | | Walz |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

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

5.117 Course: Environmental Law [T-BGU-111102]**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences**Part of:** [M-INFO-101217 - Public Business Law](#)
[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 20/21 | 6111177 | Environmental Law | 2 SWS | Lecture /  | Smeddinck |
| Exams | | | | | |
| WT 20/21 | 8262111102 | Environmental Law | | | Smeddinck |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled**Competence Certificate**

Written exam with 120 min

Prerequisites

None

Annotation

None

T

5.118 Course: European and International Law [T-INFO-101312]

Responsible: Ulf Brühann
Organisation: KIT Department of Informatics
Part of: [M-INFO-101217 - Public Business Law](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|-------------|
| ST 2021 | 24666 | Europäisches und Internationales Recht | 2 SWS | Lecture /  | Brühann |
| Exams | | | | | |
| WT 20/21 | 7500048 | European and International Law | | | Eichenhofer |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**5.119 Course: Experimental Economics [T-WIWI-102614]**

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101446 - Market Engineering](#)
[M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-101505 - Experimental Economics](#)
[M-WIWI-103118 - Data Science: Data-Driven User Modeling](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|--|-------|------------|-----------------------------------|
| WT 20/21 | 2540489 | Experimental Economics | 2 SWS | Lecture / | Peukert, Knierim |
| WT 20/21 | 2540493 | Übung zu Experimentelle Wirtschaftsforschung | 1 SWS | Practice / | Greif-Winzrieth, Knierim, Peukert |
| Exams | | | | | |
| WT 20/21 | 7900178 | Experimental Economics | | | Weinhardt |
| WT 20/21 | 7900194 | Experimental Economics | | | 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

Below you will find excerpts from events related to this course:

**Experimental Economics**

2540489, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

Experiments have become a valuable tool in Economics and Information Systems research. Nearly all fields of the economic discipline use experiments to verify theoretical predictions and to identify cause-effect relationships. Besides being used for empirical validation, this method is applied in political and strategic consulting. The lecture gives an introduction to experimental methods in Economics and in the Information Systems research domain, and shows differences to experiments in natural sciences. Scientific studies are used to show exemplary applications.

Literature

- Strategische Spiele; S. Berninghaus, K.-M. Ehrhart, W. Güth; Springer Verlag, 2. Aufl. 2006.
- Handbook of Experimental Economics; J. Kagel, A. Roth; Princeton University Press, 1995.
- Experiments in Economics; J.D. Hey; Blackwell Publishers, 1991.
- Experimental Economics; D.D. Davis, C.A. Holt; Princeton University Press, 1993.
- Experimental Methods: A Primer for Economists; D. Friedman, S. Sunder; Cambridge University Press, 1994.

T

5.120 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

5.121 Course: Financial Analysis [T-WIWI-102900]

Responsible: Dr. Torsten Luedecke
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|---|-------|--|------------------|
| ST 2021 | 2530205 | Financial Analysis | 2 SWS | Lecture /  | Luedecke |
| ST 2021 | 2530206 | Übungen zu Financial Analysis | 2 SWS | Practice /  | Luedecke |
| Exams | | | | | |
| WT 20/21 | 7900059 | Financial Analysis | | | Luedecke, Ruckes |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

See German version.

Prerequisites

None

Recommendation

Basic knowledge in corporate finance, accounting, and valuation is required.

Below you will find excerpts from events related to this course:

V

Financial Analysis

2530205, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Literature

- Alexander, D. and C. Nobes (2017): Financial Accounting – An International Introduction, 6th ed., Pearson.
- Penman, S.H. (2013): Financial Statement Analysis and Security Valuation, 5th ed., McGraw Hill.

T

5.122 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](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 4,5 | Grade to a third | Irregular | 2 |

Competence Certificate

The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Recommendation

Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics"[2520016]

Annotation

The course takes place each second summer term: 2018/2020....

T

5.123 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](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|-----------------|---------|
| Examination of another type | 4,5 | Grade to a third | see Annotations | 2 |

| Events | | | | | |
|----------|---------|--|-------|--------------|------------------------|
| WT 20/21 | 2521302 | Financial Econometrics II | 2 SWS | Lecture / 📺 | Schienle, Buse |
| WT 20/21 | 2521303 | Übung zu Financial Econometrics II | 1 SWS | Practice / 📺 | Görgen, Buse, Schienle |
| Exams | | | | | |
| WT 20/21 | 7900274 | Financial Econometrics II | | | Schienle |

Legend: 📺 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✖ Cancelled

Competence Certificate

Alternative exam assessment (Takehome Exam). Details will be announced at the beginning of the course.

Prerequisites

None

Recommendation

Knowledge of the contents covered by the course "Financial Econometrics"

Annotation

Course language is English



The course takes place each second winter term starting in WS2020/21





T

5.124 Course: Financial Intermediation [T-WIWI-102623]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)
[M-WIWI-101502 - Economic Theory and its Application in Finance](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---|-------|--|---------------------|
| WT 20/21 | 2530232 | Financial Intermediation | 2 SWS | Lecture /  | Ruckes |
| WT 20/21 | 2530233 | Übung zu Finanzintermediation | 1 SWS | Practice /  | Ruckes, Hoang, Benz |
| Exams | | | | | |
| WT 20/21 | 7900063 | Financial Intermediation | | | Ruckes |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.
The exam is offered each semester.

Prerequisites

None

Recommendation

None

Below you will find excerpts from events related to this course:

V

Financial Intermediation

2530232, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

The lecture covers the following topics:

- Arguments for the existence of financial intermediaries
- Bank loan analysis, relationship lending
- Stability of the financial system
- The macroeconomic role of financial intermediation
- Principles of the prudential regulation of banks

Learning outcomes: Students

- are in a position to describe the arguments for the existence of financial intermediaries,
- are able to discuss and analyze both static and dynamic aspects of contractual relationships between banks and borrowers,
- are able to discuss the macroeconomic role of the banking system,
- are in a position to explain the fundamental principles of the prudential regulation of banks and are able to recognize and evaluate the implications of specific regulations.

Workload:

The total workload for this course is approximately 135.0 hours. For further information see the German version.

Literature

Weiterführende Literatur:


- Hartmann-Wendels/Pfingsten/Weber (2014): Bankbetriebslehre, 6. Auflage, Springer Verlag.
- Freixas/Rochet (2008): Microeconomics of Banking, 2. Auflage, MIT Press.



T

5.125 Course: Firm creation in IT security [T-WIWI-110374]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|------------------------------|
| WT 20/21 | 2545109 | Business Planning for Founders in the field of IT-Security | 2 SWS | Seminar /  | Ntagiakou, Kienzle, Terzidis |
| Exams | | | | | |
| WT 20/21 | 7900155 | Business Planning for Founders in the field of IT-Security | | | Terzidis |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Alternative exam assessment. The grade consists of the presentation and the written elaboration.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Business Planning for Founders in the field of IT-Security

2545109, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)
Online**

Content**Information about the seminar:**

The seminar will be conducted in Zoom. More information about the process will be available in ILIAS.

In the seminar you will work in groups of max. 4 persons. Group applications are welcome but not a prerequisite for participation.

Most of the seminars will be held in English.

The focus of the seminar is Opportunity Recognition in the field of IT-Security, followed by ideation sessions with the aim to find possible applications for Cyber Security technologies that are developed at the KIT. Prototyping and also Pitching are part of the seminar.

Target group:

Master Students

Information on the allocation of seminar places:

The registration for the seminar is possible in the Wiwi portal in the period from 09.08.2020 to 23.10.2020 at 23:59 o'clock. To apply for the seminar, please send us a letter of motivation (max. 5 sentences).

Important Dates:

18.11.2020, 09:00-15:00

02.12.2020, 09:00-15:00

16.12.2020, 09:00-15:00

Deliverables:

Homework completed in the meantime among seminar days

Final presentation on **16.12.2020**

Business Plan (7000 Words)

After completing this course, the course participants will be able to

- Characterize the specifications of **Technology Push** and **Market Pull**
- Describe why **personal and team core values** are important for team formation and how they can affect start-up projects.
- Develop a sound **value proposition** for a target customer
- Recognize Business Opportunities **in the field of IT-Security** applying the **TAS Approach**
- Learn the processes of **Design Thinking**
- Build a **Prototype**
- Create **Business Ideas**
- **Pitch their Business Ideas** to potential investors

Organizational issues


Blockveranstaltung im Rahmen des KASTEL Projekts





T

5.126 Course: Fixed Income Securities [T-WIWI-102644]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|-----------------|---------|
| Written examination | 4,5 | Grade to a third | see Annotations | 1 |

| Events | | | | | |
|----------|---------|--------------|-------|---|-----------------------|
| WT 20/21 | 2530560 | Bond Markets | 3 SWS | Lecture / Practice (/  | Cölsch, Uhrig-Homburg |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The examination is offered for first-time writers for the last time in the winter semester 2020/21 and (only) for repeaters in the summer semester 2021.

The assessment takes place in the form of a written examination (75 minutes) according to §4(2), 1 SPO. The examination takes place during the semester break. The examination is offered every semester and can be repeated at any regular examination date. A bonus can be acquired through successful participation in the exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites

None

Recommendation

Knowledge from the course "Derivatives" is very helpful.

Annotation

The course will no longer be offered from winter semester 2020/21.

Below you will find excerpts from events related to this course:

V

Bond Markets

2530560, WS 20/21, 3 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

Content

The lecture "Bond Markets" deals with the national and international bond markets, which are an important source of financing for companies, as well as for the public sector. After an overview of the most important bond markets, different yield definitions are discussed. Based on this, the concept of the yield curve is presented. In addition, the theoretical and empirical relationships between ratings, default probabilities and spreads are analyzed. The focus will then be on questions regarding the valuation, measurement, management and control of credit risks.

The total workload for this course is approximately 135 hours (4.5 credits).

The assessment consists of a written exam (75min.) (according to §4(2), 1 SPO). A bonus can be earned through successful participation in the tutorial sessions. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one level (0.3 or 0.4). The examination is offered in each semester and can be repeated at any regular examination date.

Students deepen their knowledge of national and international bond markets. They gain knowledge of the traded instruments and their key figures for describing default risk such as ratings, default probabilities or credit spreads.

Organizational issues

Blockveranstaltung: Do 14:00-19:00 Uhr, Fr 9:45-17:15 Uhr


05./06.11., 19./20.11., 03./04.12.20





T

5.127 Course: Formal Systems [T-INFO-101336]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: [M-INFO-100799 - Formal Systems](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 6 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---------------------------------|-------|---|------------------|
| WT 20/21 | 24086 | Formale Systeme | 4 SWS | Lecture / Practice (/  | Beckert, Ulbrich |
| Exams | | | | | |
| WT 20/21 | 7500036 | Formal Systems | | | Beckert |
| ST 2021 | 7500009 | Formal Systems | | | Beckert |


Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.128 Course: Formal Systems II: Application [T-INFO-101281]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: [M-INFO-100744 - Formal Systems II: Application](#)
[M-INFO-101201 - Software Systems](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|--|-------|---|------------------|
| ST 2021 | 2400093 | Formal Systems II: Application | 3 SWS | Lecture /  | Ulbrich, Beckert |
| Exams | | | | | |
| ST 2021 | 7500006 | Formale Systeme II: Anwendung | | | Beckert |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.129 Course: Formal Systems II: Theory [T-INFO-101378]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: [M-INFO-100841 - Formal Systems II: Theory](#)
[M-INFO-101201 - Software Systems](#)


| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 5 | Grade to a third | Each summer term | 1 |





T

5.130 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 2021 | 2560133 | Grundlagen der nationalen und internationalen Konzernbesteuerung | 3 SWS | Lecture /  | Wigger, Gutekunst |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Depending on the further pandemic development in the summer semester 2021 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

5.131 Course: Geometric Optimization [T-INFO-101267]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-100730 - Geometric Optimization](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------|---------|
| Oral examination | 3 | Grade to a third | Irregular | 1 |

| Exams | | | |
|----------|---------|--|-----------|
| WT 20/21 | 7500050 | Geometric Optimization | Prautzsch |
| ST 2021 | 7500230 | Geometric Optimization | Prautzsch |

**5.132 Course: Global Optimization I [T-WIWI-102726]**

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|---------------------------------------|-------|-----------|-------|
| ST 2021 | 2550134 | Globale Optimierung I | 2 SWS | Lecture / | Stein |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

Success is in the form of a written examination (60 min.) (according to § 4(2), 1 SPO). The successful completion of the exercises is required for admission to the written exam.

The exam is offered in the lecture of semester and the following semester.

The success check can be done also with the success control for "Global optimization II". In this case, the duration of the written exam is 120 min.

Prerequisites

None

Recommendation

None

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.

Below you will find excerpts from events related to this course:

**Globale Optimierung I**

2550134, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of convex functions under convex constraints. It is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- Optimality in convex optimization
- Duality, bounds, and constraint qualifications
- Algorithms (Kelley's cutting plane method, Frank-Wolfe method, primal-dual interior point methods)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of *nonconvex* optimization problems forms the contents of the lecture "Global Optimization II". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands the fundamentals of deterministic global optimization in the convex case,
- is able to choose, design and apply modern techniques of deterministic global optimization in the convex case in practice.

Literature

O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990



T

5.133 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 2021 | 2550134 | Globale Optimierung I | 2 SWS | Lecture /  | Stein |
| ST 2021 | 2550135 | Übung zu Globale Optimierung I und II | 2 SWS | Practice /  | Stein, Schwarze, Beck |
| ST 2021 | 2550136 | Globale Optimierung II | 2 SWS | Lecture /  | Stein |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment of the lecture is a written examination (120 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

Prerequisites

None

Recommendation

None

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.

Below you will find excerpts from events related to this course:

V

Globale Optimierung I

2550134, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of convex functions under convex constraints. It is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- Optimality in convex optimization
- Duality, bounds, and constraint qualifications
- Algorithms (Kelley's cutting plane method, Frank-Wolfe method, primal-dual interior point methods)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of *nonconvex* optimization problems forms the contents of the lecture "Global Optimization II". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands the fundamentals of deterministic global optimization in the convex case,
- is able to choose, design and apply modern techniques of deterministic global optimization in the convex case in practice.

Literature

O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

**Globale Optimierung II**

2550136, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of nonconvex functions under nonconvex constraints. It is structured as follows:

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via alphaBB method
- Branch-and-bound methods
- Lipschitz optimization

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of *convex* optimization problems forms the contents of the lecture "Global Optimization I". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands the fundamentals of deterministic global optimization in the nonconvex case,
- is able to choose, design and apply modern techniques of deterministic global optimization in the nonconvex case in practice.

Literature

O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

T

5.134 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 2021 | 2550136 | Globale Optimierung II | 2 SWS | Lecture / | Stein |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of "Global optimization I". In this case, the duration of the written examination takes 120 minutes.

Prerequisites

None

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.

Below you will find excerpts from events related to this course:

V

Globale Optimierung II

2550136, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of nonconvex functions under nonconvex constraints. It is structured as follows:

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via alphaBB method
- Branch-and-bound methods
- Lipschitz optimization

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of *convex* optimization problems forms the contents of the lecture "Global Optimization I". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands the fundamentals of deterministic global optimization in the nonconvex case,
- is able to choose, design and apply modern techniques of deterministic global optimization in the nonconvex case in practice.

Literature

O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

T

5.135 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 |

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

5.136 Course: Growth and Development [T-WIWI-111318]

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 20/21 | 2561503 | Theory of endogenous growth | 2 SWS | Lecture /  | Ott, Scheidt |
| WT 20/21 | 2561504 | | 1 SWS | Practice /  | Ott, Eraydin |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Depending on further pandemic developments, the examination will be offered in the summer semester 2021 either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites

None

Recommendation

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

Annotation

Due to the research semester of Prof. Dr. Ingrid Ott, the course is not offered in the winter term 2018/19.

Below you will find excerpts from events related to this course:

V

Theory of endogenous growth

2561503, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

Lecture (V)
Online

Content

This course is intended as an introduction to the field of advanced macroeconomics with a special focus on economic growth. Lectures aim to deal with the theoretical foundations of exogenous and endogenous growth models. The importance of growth for nations and discussion of some (well-known) growth theories together with the role of innovation, human capital and environment will therefore be primary focuses of this course.

Learning objective:

Students shall be given the ability to understand, analyze and evaluate selected models of endogenous growth theory.

Course content:

- Intertemporal consumption decision
- Growth models with exogenous saving rates: Solow
- Growth models with endogenous saving rates: Ramsey
- Growth and environmental resources
- Basic models of endogenous growth
- Human capital and economic growth
- Modelling of technological progress
- Diversity Models
- Schumpeterian growth
- Directional technological progress
- Diffusion of technologies

Recommendations:

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

Workload:

The total workload for this course is approximately 135.0 hours. For further information see German version.

Exam description:

The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Students will be given the opportunity of writing and presenting a short paper during the lecture time to achieve a bonus on the exam grade. If the mandatory credit point exam is passed, the awarded bonus points will be added to the regular exam points. A deterioration is not possible by definition, and a grade does not necessarily improve, but is very likely to (not every additional point improves the total number of points, since a grade can not become better than 1). The voluntary elaboration of such a paper can not countervail a fail in the exam.

Literature

Auszug:

- Acemoglu, D. (2009): Introduction to modern economic growth. Princeton University Press, New Jersey.
- Aghion, P., Howitt, P. (2009): Economics of growth, MIT-Press, Cambridge/MA.
- Barro, R.J., Sala-i-Martin, X. (2003): Economic Growth. MIT-Press, Cambridge/MA.
- Sydsaeter, K., Hammond, P. (2008): Essential mathematics for economic analysis. Prentice Hall International, Harlow.
- Sydsæter, K., Hammond, P., Seierstad, A., Strom, A., (2008): Further Mathematics for Economic Analysis, Second Edition, Pearson Education Limited, Essex.

T

5.137 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 | Grade to a third | Each summer term | 1 |

| Exams | | | |
|----------|---------|------------------------------|----------|
| WT 20/21 | 7981001 | Heat Economy | Fichtner |

Competence Certificate

The lecture will be suspended in summer semester 2021.

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. 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

See German version.

T

5.138 Course: Human Factors in Security and Privacy [T-WIWI-109270]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104520 - Human Factors in Security and Privacy](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|-----------------|---------|
| Written examination | 4,5 | Grade to a third | see Annotations | 3 |

| Exams | | | |
|----------|---------|---|----------|
| WT 20/21 | 7900113 | Human Factors in Security and Privacy | 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.

The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites

1. Successful participation in the exercises. Successful means actively participating in the tasks and its discussions. One task may be missed.
2. Also participation in the lectures is required. One lecture may be missed.

Recommendation

The prior attendance of the lecture "Information Security" is strongly recommended.

Annotation

The lecture will not be offered in winter semester 2020/21.


Some lectures are in English, some in German.





T

5.139 Course: Human-Machine-Interaction [T-INFO-101266]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: [M-INFO-100729 - Human Computer Interaction](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 6 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|----------|---------|--|-------|---|-------|
| ST 2021 | 24659 | Human-Computer-Interaction | 2 SWS | Lecture /  | Beigl |
| Exams | | | | | |
| WT 20/21 | 7500076 | Human-Machine-Interaction | | | Beigl |
| ST 2021 | 7500048 | Human-Machine-Interaction | | | Beigl |



Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled





T

5.140 Course: Human-Machine-Interaction Pass [T-INFO-106257]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: [M-INFO-100729 - Human Computer Interaction](#)

| Type | Credits | Grading scale | Recurrence | Version |
|----------------------|---------|---------------|------------------|---------|
| Completed coursework | 0 | pass/fail | Each summer term | 1 |

| Events | | | | | |
|---------|---------|--|-------|--|-------|
| ST 2021 | 2400095 | Human-Computer-Interaction | 1 SWS | Practice /  | Beigl |
| ST 2021 | 24659 | Human-Computer-Interaction | 2 SWS | Lecture /  | Beigl |
| Exams | | | | | |
| ST 2021 | 7500121 | Human-Machine-Interaction | | | Beigl |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T


5.141 Course: Image Data Compression [T-INFO-101292]





Responsible: Prof. Dr.-Ing. Jürgen Beyerer
PH. D. Alexey Pak

Organisation: KIT Department of Informatics

Part of: [M-INFO-100755 - Image Data Compression](#)
[M-INFO-101239 - Machine Vision](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|--------------|
| WT 20/21 | 2400112 | Image Data Compression | 2 SWS | Lecture /  | Beyerer, Pak |
| Exams | | | | | |
| WT 20/21 | 7500013 | Image Data Compression | | | Beyerer |
| ST 2021 | 7500002 | Image Data Compression | | | Beyerer |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Below you will find excerpts from events related to this course:

V

Image Data Compression

2400112, WS 20/21, 2 SWS, [Open in study portal](#)

Lecture (V)
Blended (On-Site/Online)

Content

This module conveys to the students the theoretical and practical aspects of the principal stages in image data acquisition and compression. The discussion progresses from the coding of un-correlated sequential data streams to de-correlation of natural 2D images and to exploitation of temporal correlations in video data coding. Each considered technique is provided with a statistical justification and characterised with basic information-theoretic metrics.

In the end of the class, an outlook is given to non-conventional image-based information coding schemes (watermarking and steganography).

Educational objective:

The students will learn various kinds, sources, and uses of image-type data, and the forms of their compression. Students master the basic concepts of information theory, related to data communication and coding. Based on these concepts and general principles and characterization criteria, students are able to compare various schemes of image data representation and coding. Students have in-depth knowledge of a few selected algorithms of entropy coding, pre-coding, and 1D-signal de-correlation.

Students know 2D transform-based de-correlation methods, including Discrete Fourier Transform, Discrete Cosine Transform, Walsh-Hadamard Transform, and the Discrete Wavelet Transform and know how to use them in video coding by exploitation of temporal correlations.

Students understand the human visual system and the statistics of natural images. In addition, the students know two non-standard applications of image data coding: digital watermarking and steganography. As an exercise, students analyze several simple steganographic schemes.

Organizational issues

Corona-bedingt ist die maximale Anzahl an Studierenden, die in den einzelnen Räumen zugelassen werden dürfen, limitiert.

Daher müssen Sie sich online anmelden, sofern Sie an der Präsenz-Vorlesung teilnehmen möchten.



Bitte melden Sie sich außerdem per Email an: alexey.pak@iosb.fraunhofer.de





T

5.142 Course: Incentives in Organizations [T-WIWI-105781]

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-101500 - Microeconomic Theory](#)
[M-WIWI-101505 - Experimental Economics](#)
[M-WIWI-101510 - Cross-Functional Management Accounting](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|--|-------|--|---------------------|
| ST 2021 | 2573003 | Incentives in Organizations | 2 SWS | Lecture /  | Nieken |
| ST 2021 | 2573004 | Übung zu Incentives in Organizations | 2 SWS | Practice /  | Nieken, Mitarbeiter |
| Exams | | | | | |
| WT 20/21 | 7900201 | Incentives in Organizations | | | 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 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

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

Organizational issues

Die Vorlesungsinhalte sind als Aufzeichnungen verfügbar. An ausgewählten Vorlesungsterminen gibt es Live-Sessions. Diese werden zum Vorlesungsstart bekannt gegeben.

There are recordings of the lecture contents. There will be live sessions on selected lecture dates. These will be announced at the start of the lecture time.

T

5.143 Course: Information Service Engineering [T-WIWI-106423]

Responsible: Prof. Dr. Harald Sack
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101456 - Intelligent Systems and Services](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|----------|---------|---|-------|--------------|------|
| ST 2021 | 2511606 | Information Service Engineering | 2 SWS | Lecture / 📱 | Sack |
| ST 2021 | 2511607 | Exercises to Information Service Engineering | 1 SWS | Practice / 📱 | Sack |
| Exams | | | | | |
| WT 20/21 | 7900071 | Information Service Engineering (Registration until 08 February 2021) | | | Sack |
| ST 2021 | 7900070 | Information Service Engineering (Registration until 12 July 2021) | | | Sack |

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (20 min) following §4, Abs. 2, 2 of the examination regulation.

The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Information Service Engineering

2511606, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

- Information, Natural Language and the Web

- Natural Language Processing

- NLP and Basic Linguistic Knowledge
- NLP Applications, Techniques & Challenges
- Evaluation, Precision and Recall
- Regular Expressions and Automata
- Tokenization
- Language Model and N-Grams
- Part-of-Speech Tagging

- Knowledge Graphs

- Knowledge Representations and Ontologies
- Resource Description Framework (RDF) as simple Data Model
- Creating new Models with RDFS
- Querying RDF(S) with SPARQL
- More Expressivity via Web Ontology Language (OWL)
- From Linked Data to Knowledge Graphs
- Wikipedia, DBpedia, and Wikidata
- Knowledge Graph Programming

- Basic Machine Learning

- Machine Learning Fundamentals
- Evaluation and Generalization Problems
- Linear Regression
- Decision Trees
- Unsupervised Learning
- Neural Networks and Deep Learning

- ISE Applications

- From Data to Knowledge
- Data Mining, Information Visualization and Knowledge Discovery
- Semantic Search
- Exploratory Search
- Semantic Recommender Systems

Learning objectives:

- The students know the fundamentals and measures of information theory and are able to apply those in the context of Information Service Engineering.
- The students have basic skills of natural language processing and are enabled to apply natural language processing technology to solve and evaluate simple text analysis tasks.
- The students have fundamental skills of knowledge representation with ontologies as well as basic knowledge of Semantic Web and Linked Data technologies. The students are able to apply these skills for simple representation and analysis tasks.
- The students have fundamental skills of information retrieval and are enabled to conduct and to evaluate simple information retrieval tasks.
- The students apply their skills of natural language processing, Linked Data engineering, and Information Retrieval to conduct and evaluate simple knowledge mining tasks.
- The students know the fundamentals of recommender systems as well as of semantic and exploratory search.

Literature


- D. Jurafsky, J.H. Martin, Speech and Language Processing, 2nd ed. Pearson Int., 2009.
- S. Hitzler, S. Rudolph, Foundations of Semantic Web Technologies, Chapman / Hall, 2009.
- R. Baeza-Yates, B. Ribeiro-Neto, Modern Information Retrieval, 2nd ed., Addison Wesley, 2010.
- S. Marsland, Machine Learning - An Algorithmic Perspective, 2nd ed., CRC Press, 2015





T

5.144 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 2021 | 2545100 | Innovation Management: Concepts, Strategies and Methods | 2 SWS | Lecture /  | 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 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
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

Die **Vorlesung** wird als interaktive **online Veranstaltung** durchgeführt. Die Vorlesung startet am 15.04.2021 und findet donnerstags 10:00-11:30 Uhr statt. **Wichtig!** Bitte treten Sie dem **ILIAS-Kurs zur Vorlesung** bei, damit wir Ihnen weitere Informationen mitteilen können.

Literature

Eine ausführliche Literaturliste wird mit den Vorlesungsunterlagen zur Verfügung gestellt.

Eine Einführung bei: Vahs, D./Brem, A. (2013): Innovationsmanagement. Von der Idee zur erfolgreichen Vermarktung, 4. Auflage, Stuttgart 2013.

T

5.145 Course: Innovation Processes Live [T-WIWI-110234]

Responsible: Dr. Daniela Beyer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Irregular | 1 |

Competence Certificate

Alternative exam assessments (\$4(2), 3 SPO). The grade consists of an exposé (15%), a guideline interview or an analysis tool (25%), a group presentation of the results (20%) and a seminar paper (40%).

Prerequisites

None.

Recommendation



Prior attendance of the course Innovation Management [2545015] is recommended.





T

5.146 Course: Innovation Theory and Policy [T-WIWI-102840]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101478 - Innovation and Growth](#)
[M-WIWI-101514 - Innovation Economics](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|--|-------|--|-----|
| ST 2021 | 2560236 | Innovationtheory and -policy | 2 SWS | Lecture /  | Ott |
| ST 2021 | 2560237 | | 1 SWS | Practice /  | Ott |
| Exams | | | | | |
| WT 20/21 | 7900077 | Innovationtheory and -Policy | | | Ott |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Depending on further pandemic developments, the examination will be offered in the summer semester 2021 either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites

None

Recommendation

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

Below you will find excerpts from events related to this course:

V

Innovationtheory and -policy

2560236, SS 2021, 2 SWS, Language: German/English, [Open in study portal](#)

Lecture (V)
Online

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

5.147 Course: Integrated Network and Systems Management [T-INFO-101284]

Responsible: Prof. Dr. Bernhard Neumair
Organisation: KIT Department of Informatics
Part of: [M-INFO-101210 - Dynamic IT-Infrastructures](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 4 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|---|-------|---|---------|
| ST 2021 | 2400004 | Integrated Network and Systems Management | 2 SWS | Lecture /  | Neumair |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T 5.148 Course: Intelligent Agent Architectures [T-WIWI-111267]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101470 - Data Science: Advanced CRM](#)
[M-WIWI-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services](#)

| | | | | |
|------------------------------------|-----------------------|--|---------------------------------------|---------------------|
| Type Written examination | Credits 4,5 | Grading scale Grade to a third | Recurrence Each winter term | Version 1 |
|------------------------------------|-----------------------|--|---------------------------------------|---------------------|

| Events | | | | | |
|----------|----------|--|--------------|-----------|--------------|
| WT 20/21 | 2540525 | Intelligent Agent Architectures | 2 SWS | Lecture / | Geyer-Schulz |
| WT 20/21 | 2540526 | Übung zu Intelligent Agent Architectures | 1 SWS | Practice | Nazemi |
| Exams | | | | | |
| WT 20/21 | 79011480 | Intelligent CRM Architectures | 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 20/21, 2 SWS, Language: English, Open in study portal | Lecture (V) Online |
|----------|---|-------------------------------------|

Content**Course content:**

The lecture is structured in three parts:

In the first part the methods used for architecture design are introduced (system analysis, UML, formal specification of interfaces, software and analysis patterns, and the separation in conceptual and IT-architectures. The second part is dedicated to learning architectures and machine learning methods. The third part presents examples of learning CRM-Architectures.

Workload:

The total workload for this course is approximately 135 hours (4.5 credits):

Time of attendance

- Attending the lecture: 15 x 90min = 22h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m
- Examination: 1h 00m

Self-study

- Preparation and wrap-up of the lecture: 15 x 180min = 45h 00m
- Preparing the exercises: 25h 00m
- Preparation of the examination: 31h 00m

Sum: 135h 00m

Learning Goals:

Students have special knowledge of software architectures and of the methods which are used in their development (Systems analysis, formal methods for the specification of interfaces and algebraic semantic, UML, and, last but not least, the mapping of conceptual architectures to IT architectures.

Students know important architectural patterns and they can – based on their CRM knowledge – combine these patterns for innovative CRM applications.

Assessment:

The assessment consists of a written exam of 1-hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation.

The course is considered successfully taken if at least 50 out of 100 points are acquired in the written exam. In this case, all additional points (up to 10) from exercise work will be added.

Grade: Minimum points

- 1,0: 95
- 1,3: 90
- 1,7: 85
- 2,0: 80
- 2,3: 75
- 2,7: 70
- 3,0: 65
- 3,3: 60
- 3,7: 55
- 4,0: 50
- 5,0: 0

The grade consists of approximately 91% of exam points and 9% of exercise points.

Literature

- P. Clements u. a., *Documenting Software Architectures. Views and Beyond*. Upper Saddle River: Addison-Wesley, 2011.
- Fowler, *Patterns of Enterprise Application Architecture*. Amsterdam: Addison-Wesley Longman, 2002.
- S. Russell und P. Norvig, *Artificial Intelligence: A Modern Approach*, 3. Aufl. Harlow Essex England: Pearson New International Edition, 2014.
- V. N. Vapnik, *The Nature of Statistical Learning Theory*. New York: Springer, 1995.

T



5.149 Course: Intelligent Agents and Decision Theory [T-WIWI-110915]





Responsible: Prof. Dr. Andreas Geyer-Schulz

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101470 - Data Science: Advanced CRM](#)
[M-WIWI-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 2021 | 2540537 | Intelligent Agents and Decision Theory | | Lecture /  | Geyer-Schulz |
| ST 2021 | 2540538 | Übung zu Intelligent Agents and Decision Theory | 1 SWS | Practice /  | Schweizer |
| Exams | | | | | |
| WT 20/21 | 7900341 | Intelligent Agents and Decision Theory | | | Geyer-Schulz |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Oral (30 minutes) or written examination (60 minutes). The exam is held in each semester and can be repeated at any regular examination date. Details of the grading system and any exam bonus that may be achieved from the practice are announced in the course.

Prerequisites

None

Recommendation

We assume knowledge in statistics, operations research and microeconomics as taught in the Bachelor program (VWL I, Operations Research I + II, Statistics I + II) and a familiarity with preferably the Python programming language.

Annotation

new lecture starting summer semester 2020

Below you will find excerpts from events related to this course:

V

Intelligent Agents and Decision Theory

2540537, SS 2021, SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

The key assumption of this lecture is that the concept of artificial intelligence is inseparably linked to the economic concept of rationality of agents. We consider different classes of decision problems - decisions under certainty, risk and uncertainty - from an economic, managerial and AI-engineering perspective:

From an economic point of view, we analyze how to act rationally in these situations based on classic utility theory. In this regard, the course also introduces the relevant parts of decision theory for dealing with

- multiple conflicting objectives,
- incomplete, risky and uncertain information about the world,
- assessing utility functions, and
- quantifying the value of information ...

From an engineering perspective, we discuss how to develop practical solutions for these decision problems, using appropriate AI components. We introduce

- a general, agent-based design framework for AI systems,

as well as AI methods from the fields of

- search (for decisions under certainty),
- inference (for decisions under risk) and
- learning (for decisions under uncertainty).

Where applicable, the course highlights the theoretical ties of these methods with decision theory.

We conclude with a discussion of ethical and philosophical issues concerning the development and use of AI.

Learning objectives

Students are able to design, analyze, implement, and evaluate intelligent agents.

Lecture Outline

1. Introduction: Artificial intelligence and the economic concept of rationality
2. Intelligent Agents: A general, agent-based design framework for AI systems
3. Decision under certainty: Assessing utility functions for decisions with multiple objectives
4. Search: Linear programming for decisions under certainty
5. Decisions under risk: The expected utility principle
6. Information systems: Improving economic decisions under risk
7. Inference: Bayesian networks for decisions under risk
8. Information Learning objectives value: When should an agent gather new information?
9. Decisions under uncertainty: Complete lack of information
10. Learning: Statistical learning of bayesian networks
11. Learning: Supervised learning with neural networks
12. Learning: Reinforcement learning
13. Learning: Preference-based reinforcement learning
14. Discussion: Ethical and philosophical issues

Note: This rough outline may be subject to change.

Literature**Basic literature (by lecture):**

1. Russell & Norvig (2016, chapter 1), Bamberg et al. (2019, chapters 1 & 2)
2. Russell & Norvig (2016, chapter 2)
3. Keeney & Raiffa (1993, chapter 3)
4. Nickel et al. (2014, chapter 1) [German], Russell & Norvig (2016, chapter 3)
5. Bamberg et al. (2019, chapter 4), Fishburn (1988)
6. Bamberg et al. (2019, chapter 6)
7. Russell & Norvig (2016, chapters 13, 14, 16)
8. Russell & Norvig (2016, chapter 16), Bamberg et al. (2019, chapter 6)
9. Bamberg et al. (2019, chapter 5)
10. Russell & Norvig (2016, chapter 20)
11. Goodfellow et al. (2016, chapter 6)
12. Sutton & Barto (2018, chapter 3)
13. Wirth et al. (2017)
14. Russell & Norvig (2016, chapter 26)

Detailed references:

Bamberg, Coenenberg & Krapp (2019). Betriebswirtschaftliche Entscheidungslehre (16th ed.). Verlag Franz Vahlen GmbH.

Fishburn (1988). Nonlinear preference and utility theory. Baltimore: Johns Hopkins University Press.

Goodfellow, Bengio & Courville (2016). Deep learning. Cambridge: MIT press.

Keeney & Raiffa (1993). Decisions with multiple objectives: preferences and value trade-offs. Cambridge University Press.

Nickel, S., Stein, O., & Waldmann, K.-H. (2014). Operations Research (2nd ed.). Springer Berlin Heidelberg.

Russell & Norvig (2016). Artificial Intelligence: A Modern Approach (3rd Global Edition). Pearson.

Sutton & Barto (2018). Reinforcement learning: An introduction. Cambridge: MIT press.

Wirth, Akrouf, Neumann & Fürnkranz (2017). A Survey of Preference-Based Reinforcement Learning Methods. Journal of Machine Learning Research, 18(1), 1-46.

T


5.150 Course: International Business Development and Sales [T-WIWI-110985]

Responsible: Erice Casenave
Prof. Dr. Martin Klarmann
Prof. Dr. Orestis Terzidis

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-105312 - Marketing and Sales Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|-----------------|---------|
| Examination of another type | 6 | Grade to a third | see Annotations | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|------------------------------|
| WT 20/21 | 2500003 | International Business Development and Sales | 4 SWS | Block /  | Klarmann, Terzidis, Casenave |
| Exams | | | | | |
| WT 20/21 | 7900353 | International Business Development and Sales | | | Klarmann, Terzidis |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Non exam assessment. The grade is based on the presentation, the subsequent discussion and the written elaboration.

Annotation

Due to the Corona situation it is currently unclear whether the seminar can be offered in WS20 / 21.

Below you will find excerpts from events related to this course:

V

International Business Development and Sales

2500003, WS 20/21, 4 SWS, Language: English, [Open in study portal](#)

**Block (B)
On-Site**

Content

This course is offered as part of the EUCOR programme in cooperation with EM Strasbourg. Max. 10 students of KIT and max. 10 students of EM Strasbourg will develop a sales presentation in tandems (teams of 2). This is based on the value proposition of a business model.

- An application is required to participate in this event. The application phase usually takes place at the beginning of the lecture period. Further information on the application process can be found on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the start of the lecture period.

Total workload for 6 ECTS: about 180 hours.

T

5.151 Course: International Finance [T-WIWI-102646]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|-----------------|---------|
| Written examination | 3 | Grade to a third | see Annotations | 1 |

| Events | | | | | |
|----------|---------|---------------------------------------|-------|--------------|-----------------------|
| WT 20/21 | 2530570 | International Finance | 2 SWS | Lecture / 🗨️ | Walter, Uhrig-Homburg |
| ST 2021 | 2530570 | International Finance | 2 SWS | Lecture / 📱 | Walter, Uhrig-Homburg |
| Exams | | | | | |
| WT 20/21 | 7900052 | International Finance | | | Uhrig-Homburg |

Legend: 📱 Online, 🗨️ Blended (On-Site/Online), 🗨️ On-Site, ✕ Cancelled

Competence Certificate

Depending on further pandemic developments, the examination will be offered in the summer semester 2021 either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites

None

Recommendation

None

Annotation

The course will not be offered in the summer semester 2020 as originally planned, but only in the winter semester 2020/2021.

The course is offered as a 14-day or block course.

Below you will find excerpts from events related to this course:

V

International Finance

2530570, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
On-Site

Organizational issues

Blockveranstaltung

Literature**Weiterführende Literatur:**

- Eiteman, D. et al., Multinational Business Finance, 13. Auflage, 2012.
- Solnik, B. und D. McLeavey, Global Investments, 6. Auflage, 2008.

V

International Finance

2530570, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Organizational issues

nach dem 21.04. nach Absprache

Literature

Weiterführende Literatur:

- Eiteman, D. et al., Multinational Business Finance, 13. Auflage, 2012.
- Solnik, B. und D. McLeavey, Global Investments, 6. Auflage, 2008.

T 5.152 Course: International Management in Engineering and Production [T-WIWI-102882]

Responsible: Dr. Henning Sasse
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101412 - Industrial Production III](#)
[M-WIWI-101471 - Industrial Production II](#)

| | | | | |
|------------------------------------|-----------------------|--|---------------------------------------|---------------------|
| Type Written examination | Credits 3,5 | Grading scale Grade to a third | Recurrence Each winter term | Version 1 |
|------------------------------------|-----------------------|--|---------------------------------------|---------------------|

| Events | | | | | |
|----------|---------|--|-------|-------------|------------|
| WT 20/21 | 2581956 | International Management in Engineering and Production | 2 SWS | Lecture / 📱 | Sasse |
| Exams | | | | | |
| WT 20/21 | 7981956 | International Management in Engineering and Production | | | 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

International Management in Engineering and Production

2581956, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

- Fundamentals of international business
- Forms of international cooperation and value creation
- Site selection
- Cost driven internationalization and site selection
- Sales and customer driven internationalization and site selection
- Challenges, risks and risk mitigation
- Management of international production sites
- Types and case studies of international production

Organizational issues

Blockveranstaltung

Im Seminarraum-West beim IIP, Termine siehe Institutshomepage

Literature


Wird in der Veranstaltung bekannt gegeben.



T

5.153 Course: Internet Law [T-INFO-101307]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [M-INFO-101215 - Intellectual Property Law](#)
[M-INFO-101242 - Governance, Risk & Compliance](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|----------|---------|------------------------------|-------|---|--------------|
| WT 20/21 | 24354 | Internet Law | 2 SWS | Lecture /  | Dreier |
| Exams | | | | | |
| WT 20/21 | 7500060 | Internet Law | | | Dreier, Matz |


Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled





T

5.154 Course: Internet of Everything [T-INFO-101337]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [M-INFO-101203 - Wireless Networking](#)
[M-INFO-101205 - Future Networking](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 4 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|--------------------------|
| WT 20/21 | 24104 | Internet of Everything | 2 SWS | Lecture /  | Zitterbart, Friebe, Jung |
| Exams | | | | | |
| WT 20/21 | 7500009 | Internet of Everything | | | Zitterbart |
| WT 20/21 | 7500306 | Internet of Everything für Wiederholer | | | Zitterbart |
| ST 2021 | 7500071 | Internet of Everything | | | Zitterbart |



Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled



T

5.155 Course: Introduction in Computer Networks [T-INFO-102015]

Responsible: Prof. Dr. Martina Zitterbart**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-101178 - Communication and Database Systems](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|---|-------|--|--|
| ST 2021 | 24519 | Einführung in Rechnernetze | 2 SWS | Lecture /  | Kopmann, Neumeister, Schneider, Friebe, Jung, Zitterbart |
| ST 2021 | 24521 | Übung zu Einführung in Rechnernetze | 1 SWS | Practice /  | Kopmann, Neumeister, Schneider, Friebe, Jung, Zitterbart |
| Exams | | | | | |
| WT 20/21 | 7500201 | Introduction to Computer Networking | | | Zitterbart |
| ST 2021 | 7500116 | Introduction to Computer Networking | | | Zitterbart |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.156 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 | 3 | Grade to a third | Once | 1 |

Competence Certificate

Grades will be based on active participation (50%) and homework assignments (50%).

Prerequisites

Participants should already have a basic knowledge of R and standard frequentist statistical tests. Please bring your own Laptop with you as we will be using R for several hands-on examples and exercises during the class. We will mainly work with the book "Statistical Rethinking. A Bayesian Course with Examples in R and Stan" by Richard McElrath. Students are advised to obtain the book before the class starts.

Annotation

Due to its interactive nature, participation will be limited to 10 students. If you want to participate, please send a short email to scheibehenne@kit.edu until Thursday, the 23rd of April in which you outline why you are interested in this class and what your expectations are.




The class will consist of three day-long sessions from 9:00 (s.t.) to 18:00. The first session will be held on Thursday, the 7th of May 2020. The second session will be on Thursday, the 28th of May. The third session will be on Thursday, the 18th of June. The classroom will be communicated to registered students in advance. In case classrooms will be closed due to the Corona virus, the class will be taught online and the schedule will be adapted.





T

5.157 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 |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|----------|---------|--|-------|--|-------------------|
| ST 2021 | 2550470 | Einführung in die Stochastische Optimierung | 2 SWS | Lecture /  | Rebennack |
| ST 2021 | 2550471 | Übung zur Einführung in die Stochastische Optimierung | 1 SWS | Practice /  | Rebennack, Sinske |
| ST 2021 | 2550474 | Rechnerübung zur Einführung in die Stochastische Optimierung | 2 SWS | Practice /  | Rebennack, Sinske |
| Exams | | | | | |
| WT 20/21 | 7900242 | Introduction to Stochastic Optimization | | | Rebennack |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled**Competence Certificate**

Alternative exam assessment (open book exam). The exam takes place in every semester.

Prerequisites


None.





T

5.158 Course: Introduction to Video Analysis [T-INFO-101273]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: [M-INFO-100736 - Introduction to Video Analysis](#)
[M-INFO-101239 - Machine Vision](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|----------------|
| ST 2021 | 24684 | Introduction to Video Analysis | 2 SWS | Lecture /  | Arens |
| Exams | | | | | |
| WT 20/21 | 7500099 | Introduction to Video Analysis | | | Beyerer, Arens |
| ST 2021 | 7500031 | Introduction to Video Analysis | | | Beyerer, Arens |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.159 Course: IT- Security Law [T-INFO-109910]

Responsible: apl. Prof. Dr. Oliver Raabe
Organisation: KIT Department of Informatics
Part of: [M-INFO-101242 - Governance, Risk & Compliance](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 3 | Grade to a third | Irregular | 1 |

T

5.160 Course: IT-Security Management for Networked Systems [T-INFO-101323]

Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: [M-INFO-101204 - Networking Labs](#)
[M-INFO-101207 - Networking Security - Theory and Praxis](#)
[M-INFO-101210 - Dynamic IT-Infrastructures](#)
[M-WIWI-101458 - Ubiquitous Computing](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 5 | Grade to a third | Each winter term | 1 |




T

5.161 Course: Joint Entrepreneurship Summer School [T-WIWI-109064]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 6 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|---------|---------|---|-------|---|-----------------------------|
| ST 2021 | 2545021 | Joint Entrepreneurship School | 4 SWS | Seminar /  | Kleinn, Mohammadi, 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.

Prerequisites

The Summer School is aimed at master students of KIT. Prerequisite is the participation in the selection process.

Recommendation

We recommend basic business knowledge, the lecture Entrepreneurship as well as openness and interest in intercultural exchange. Solid knowledge of the English language is an advantage.

Annotation


The working language during the Summer School is English. A one-week stay in China is part of the Summer School.





T

5.162 Course: Judgment and Decision Making [T-WIWI-111099]

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-105312 - Marketing and Sales Management](#)

| Type | Credits | Grading scale | Recurrence | Expansion | Version |
|---------------------|---------|------------------|------------|-----------|---------|
| Written examination | 4,5 | Grade to a third | Once | 1 terms | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|--------------|
| WT 20/21 | 2540440 | Judgment and Decision Making | 3 SWS | Lecture /  | Scheibehenne |
| Exams | | | | | |
| WT 20/21 | 7900357 | Judgment and Decision Making | | | Scheibehenne |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The grade will be based on the written exam (60 minutes) at the end of the semester.

Below you will find excerpts from events related to this course:

V

Judgment and Decision Making

2540440, WS 20/21, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

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

This lecture will be held online. The lecture videos will be available for download and there will be live Q&A sessions.

T

5.163 Course: KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics [T-WIWI-111109]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101446 - Market Engineering](#)
[M-WIWI-103118 - Data Science: Data-Driven User Modeling](#)
[M-WIWI-104080 - Designing Interactive Information Systems](#)

| Type | Credits | Grading scale | Recurrence | Expansion | Version |
|-----------------------------|---------|------------------|------------------|-----------|---------|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 1 terms | 1 |

Competence Certificate

Non exam assessment. Grading will be based on a continuous basis throughout the semester. The assessment consists of:

- A written paper, and
- a group presentation with subsequent discussion and question and answer session of 30 minutes.

For particularly active and constructive participation in the discussions of other papers during the final presentation, a bonus of one grade level (0.3 or 0.4) can be achieved on the passed exam. Details on the grading will be announced at the beginning of the event.

Annotation

Due to the laboratory capacity and in order to ensure an optimal supervision of the project groups, the number of participants is limited. Places are allocated according to preferences and suitability for the topics. In particular, previous knowledge in the field of experimental economics plays a role.

The course will be offered starting in the summer semester 2021.

T

5.164 Course: Knowledge Discovery [T-WIWI-102666]

Responsible: Michael Färber
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101456 - Intelligent Systems and Services](#)
[M-WIWI-105366 - Artificial Intelligence](#)
[M-WIWI-105368 - Web and Data Science](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|----------|---------|---|-------|------------|---------------|
| WT 20/21 | 2511302 | Knowledge Discovery | 2 SWS | Lecture / | Färber |
| WT 20/21 | 2511303 | Exercises to Knowledge Discovery | 1 SWS | Practice / | Färber, Saier |
| Exams | | | | | |
| WT 20/21 | 7900013 | Knowledge Discovery (Registration until 08 February 2021) | | | Sure-Vetter |
| ST 2021 | 7900039 | Knowledge Discovery (Registration until 12 July 2021) | | | Färber |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

The assessment consists of an 1h written exam following §4, Abs. 2, 1 of the examination regulation.

Students can be awarded a bonus on their final grade if they successfully complete special assignments.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Knowledge Discovery

2511302, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

The lecture gives an overview of approaches of machine learning and data mining for knowledge acquisition from large data sets. These are examined especially with respect to algorithms, applicability to different data representations and the use in real application scenarios.

Knowledge Discovery is an established research area with a large community that investigates methods for discovering patterns and regularities in large amounts of data, including unstructured text. A variety of methods exist to extract patterns and provide previously unknown insights. This information can be predictive or descriptive.

The lecture gives an overview of Knowledge Discovery. Specific techniques and methods, challenges and current and future research topics in this research area will be taught.

Contents of the lecture cover the entire machine learning and data mining process with topics on supervised and unsupervised learning and empirical evaluation. Covered learning methods range from classical approaches like decision trees, support vector machines and neural networks to selected approaches from current research. Learning problems considered include feature vector-based learning and text mining.

Learning objectives:

Students

- know fundamentals of Machine Learning, Data Mining and Knowledge Discovery.
- are able to design, train and evaluate adaptive systems.
- conduct Knowledge Discovery projects in regards to algorithms, representations and applications.

Workload:

- The total workload for this course is approximately 135 hours
- Time of presentness: 45 hours
- Time of preparation and postprocessing: 60 hours
- Exam and exam preparation: 30 hours

Literature

- T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning: Data Mining, Inference, and Prediction (<http://www-stat.stanford.edu/~tibs/ElemStatLearn/>)
- T. Mitchell. Machine Learning. 1997
- M. Berhold, D. Hand (eds). Intelligent Data Analysis - An Introduction. 2003
- P. Tan, M. Steinbach, V. Kumar: Introduction to Data Mining, 2005, Addison Wesley

**Exercises to Knowledge Discovery**

2511303, WS 20/21, 1 SWS, Language: English, [Open in study portal](#)

**Practice (Ü)
Online**

Content

The exercises are based on the lecture Knowledge Discovery. Several exercises are covered, which take up and discuss in detail the topics covered in the lecture Knowledge Discovery. Practical examples are demonstrated to the students to enable a knowledge transfer of the theoretical aspects learned into practical application.

Contents of the lecture cover the entire machine learning and data mining process with topics on monitored and unsupervised learning processes and empirical evaluation. The learning methods covered range from classical approaches like decision trees, support vector machines and neural networks to selected approaches from current research. Learning problems considered include feature vector-based learning and text mining.

Learning objectives:

Students

- know fundamentals of Machine Learning, Data Mining and Knowledge Discovery.
- are able to design, train and evaluate adaptive systems.
- conduct Knowledge Discovery projects in regards to algorithms, representations and applications.

Literature

- T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning: Data Mining, Inference, and Prediction (<http://www-stat.stanford.edu/~tibs/ElemStatLearn/>)
- T. Mitchell. Machine Learning. 1997
- M. Berhold, D. Hand (eds). Intelligent Data Analysis - An Introduction. 2003
- P. Tan, M. Steinbach, V. Kumar: Introduction to Data Mining, 2005, Addison Wesley

T


5.165 Course: Lab Course: Natural Language Processing and Software Engineering [T-INFO-106239]




Responsible: Prof. Dr.-Ing. Anne Koziolk

Organisation: KIT Department of Informatics

Part of: [M-INFO-103138 - Lab Course: Natural Language Processing and Software Engineering](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|--|-------|--|-----------------------|
| WT 20/21 | 2400082 | Lab Course: Natural Language Processing and Software Engineering | 4 SWS | Practical course /  | Koziolk, Hey, Weigelt |
| Exams | | | | | |
| WT 20/21 | 7500003 | Lab Course: Natural Language Processing and Software Engineering | | | Koziolk |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Below you will find excerpts from events related to this course:

V

Lab Course: Natural Language Processing and Software Engineering

2400082, WS 20/21, 4 SWS, Language: German, [Open in study portal](#)

Practical course (P)
Blended (On-Site/Online)

Organizational issues

Das Praktikum wird größtenteils online durchgeführt. Wenn es die Teilnehmeranzahl und die Situation erlaubt, wird die Abschlussveranstaltung (Einsatz des Roboters auf selbsterstelltem Parcours) in Präsenz durchgeführt.

Literature

Verwendete Literatur wird im Praktikum bereitgestellt.

T

5.166 Course: Lab: Graph Visualization in Practice [T-INFO-106580]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [M-INFO-103302 - Lab: Graph Visualization in Practice](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 5 | Grade to a third | Irregular | 1 |

T 5.167 Course: Laboratory Course Algorithm Engineering [T-INFO-104374]

Responsible: Prof. Dr. Peter Sanders
 Dr. rer. nat. Torsten Ueckerdt
 Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: [M-INFO-101199 - Advanced Algorithms: Design and Analysis](#)
[M-INFO-101200 - Advanced Algorithms: Engineering and Applications](#)
[M-INFO-102072 - Laboratory Course Algorithm Engineering](#)

| | | | | |
|--|---------------------|--|--------------------------------|---------------------|
| Type Examination of another type | Credits 6 | Grading scale Grade to a third | Recurrence Irregular | Version 1 |
|--|---------------------|--|--------------------------------|---------------------|

| Events | | | | | |
|----------|---------|--|-------|--------------------|---|
| WT 20/21 | 2424305 | Practical Course in Algorithm Design | 4 SWS | Practical course / | Buchhold, Zündorf, Zeitz, Ueckerdt, Sauer |
| Exams | | | | | |
| WT 20/21 | 7500072 | Practical Course in Algorithm Design | | | Ueckerdt |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Below you will find excerpts from events related to this course:

V

Practical Course in Algorithm Design

2424305, WS 20/21, 4 SWS, Language: German, [Open in study portal](#)

Practical course (P)
On-Site

Content

In the practical course *Algorithm Engineering* the students are given miscellaneous questions from algorithmics, which they have to implement independently in small working groups. The main focus lies on object oriented programming with Java or C++. Linear programming may also occur.

Prerequisites: Knowledge of the lecture Algorithms II is recommended.

Learning Goals:

The purpose of the practical course in algorithm design is to make learned knowledge work. The students are given varying topics from algorithmics, which they have to implement in small working groups. Possible Topics are, for example, algorithms for flow problems, shortest path problems, or clustering techniques. In this way students learn to write efficient code.


Workload: Praktikum mit 4SWS, 6 LP
 6 LP entspricht ca. 180 Arbeitsstunden


T

5.168 Course: Language Technology and Compiler [T-INFO-101343]

Responsible: Prof. Dr.-Ing. Gregor Snelting
Organisation: KIT Department of Informatics
Part of: [M-INFO-100806 - Language Technology and Compiler](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 8 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|----------|
| ST 2021 | 24661 | Language Technology and Compiler | 4 SWS | Lecture /  | Snelting |
| Exams | | | | | |
| WT 20/21 | 7500107 | Language Technology and Compiler | | | Snelting |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Below you will find excerpts from events related to this course:

V

Language Technology and Compiler

24661, SS 2021, 4 SWS, Language: German, [Open in study portal](#)




Lecture (V)
Online





T

5.169 Course: Large-scale Optimization [T-WIWI-106549]

Responsible: Prof. Dr. Steffen Rebennack**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-101473 - Mathematical Programming](#)
[M-WIWI-102832 - Operations Research in Supply Chain Management](#)
[M-WIWI-103289 - Stochastic Optimization](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---------|---------|--|-------|--|-------------------|
| ST 2021 | 2550475 | Large-Scale Optimization | 2 SWS | Lecture /  | Rebennack |
| ST 2021 | 2550476 | Übung zu Large-Scale Optimization | 1 SWS | Practice /  | Rebennack, Sinske |
| ST 2021 | 2550477 | Rechnerübung zu Large-scale Optimization | 2 SWS | Practice /  | Rebennack, Sinske |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled**Competence Certificate**

Alternative exam assessment (open book exam). The exam takes place in every semester.

Prerequisites


None.

T

5.170 Course: Law of Contracts [T-INFO-101316]

Responsible: Dr. Alexander Hoff
Organisation: KIT Department of Informatics
Part of: [M-INFO-101216 - Private Business Law](#)
[M-INFO-101242 - Governance, Risk & Compliance](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|----------------------------------|-------|---|--------------|
| ST 2021 | 24671 | Law of Contracts | 2 SWS | Lecture /  | Leipert |
| Exams | | | | | |
| WT 20/21 | 7500059 | Law of Contracts | | | Dreier, Matz |


Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.171 Course: Liberalised Power Markets [T-WIWI-107043]

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101451 - Energy Economics and Energy Markets](#)
[M-WIWI-102808 - Digital Service Systems in Industry](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|----------|
| WT 20/21 | 2581998 | Liberalised Power Markets | 2 SWS | Lecture /  | Fichtner |
| Exams | | | | | |
| WT 20/21 | 7900193 | Liberalised Power Markets | | | 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

Liberalised Power Markets

2581998, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content**1. Power markets in the past, now and in future****2. Designing liberalised power markets**

- 2.1. Unbundling Dimensions of liberalised power markets
- 2.2. Central dispatch versus markets without central dispatch
- 2.3. The short-term market model
- 2.4. The long-term market model
- 2.5. Market flaws and market failure
- 2.6. Regulation in liberalised markets

3. The power (sub)markets

- 3.1 Day-ahead market
- 3.2 Intraday market
- 3.3 (Long-term) Forwards and futures markets
- 3.4 Emission rights market
- 3.5 Market for ancillary services
- 3.6 The “market” for renewable energies
- 3.7 Future market segments

4. Grid operation and congestion management

- 4.1. Grid operation
- 4.2. Congestion management

5. Market power

- 5.1. Defining market power
- 5.2. Indicators of market power
- 5.3. Reducing market power

6. Future market structures in the electricity value chain**1. Power markets in the past, now and in future****2. Designing liberalised power markets**

- 2.2. Unbundling Dimensions of liberalised power markets
- 2.3. Central dispatch versus markets without central dispatch
- 2.4. The short-term market model
- 2.5. The long-term market model
- 2.6. Market flaws and market failure
- 2.7. Regulation in liberalised markets

3. The power (sub)markets

- 3.1 Day-ahead market
- 3.2 Intraday market
- 3.3 (Long-term) Forwards and futures markets
- 3.4 Emission rights market
- 3.5 Market for ancillary services
- 3.6 The “market” for renewable energies
- 3.7 Future market segments

4. Grid operation and congestion management

- 4.1. Grid operation
- 4.2. Congestion management

5. Market power

- 5.1. Defining market power
- 5.2. Indicators of market power
- 5.3. Reducing market power

6. Future market structures in the electricity value chain

Literature

Weiterführende Literatur:

Power System Economics; Steven Stoft, IEEE Press/Wiley-Interscience Press, 0-471-15040-1

T

5.172 Course: Life Cycle Assessment [T-WIWI-110512]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101412 - Industrial Production III](#)
[M-WIWI-101471 - Industrial Production II](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---------------------------------------|-------|-----------|-------------------|
| WT 20/21 | 2581995 | Life Cycle Assessment | 2 SWS | Lecture / | Maier, Schultmann |
| Exams | | | | | |
| WT 20/21 | 7981995 | Life Cycle Assessment | | | 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

Life Cycle Assessment

2581995, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

Introduction to life cycle assessment. The lecture describes structure and individual steps of life cycle assessment in detail.

Literature


werden in der Veranstaltung bekannt gegeben

T

5.173 Course: Machine Learning - Basic Methods [T-INFO-110630]

Responsible: Prof. Dr. Gerhard Neumann
Organisation: KIT Department of Informatics
Part of: [M-INFO-105252 - Machine Learning - Basic Methods](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 5 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|----------|---------|--|----------------------------|---|---------------------------|
| WT 20/21 | 2400129 | Machine Learning - Basic Methods | SWS: 3 / ECTS: 5 SWS | Lecture / Practice (/  | Neumann, Celik, Becker |
| Exams | | | | | |
| WT 20/21 | 7500260 | Machine Learning - Basic Methods | | | Neumann |
| ST 2021 | 7500306 | Machine Learning - Basic Methods | | | Neumann |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Below you will find excerpts from events related to this course:

V

Machine Learning - Basic Methods

2400129, WS 20/21, SWS: 3 / ECTS: 5 SWS, Language: English, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

Content

Qualifikationsziele:

- Studierende Erlangen Kenntnis der grundlegenden Methoden des Maschinellen Lernens
- Studierende erlangen die mathematischen Grundkenntnisse um die theoretischen Grundlagen des Maschinellen Lernens verstehen zu können
- Studierende können Methoden des Maschinellen Lernens einordnen, formal beschreiben und bewerten
- Studierende können ihr Wissen für eine Auswahl geeigneter Modelle und Methoden für ausgewählte Probleme im Bereich des Maschinellen Lernens einsetzen

Organizational issues

Prof. Gerhard Neumann

M.Sc. Onur Celik

T 5.174 Course: Machine Learning 1 - Basic Methods [T-WIWI-106340]

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103356 - Machine Learning](#)

| | | | | |
|------------------------------------|-----------------------|--|---------------------------------------|---------------------|
| Type Written examination | Credits 4,5 | Grading scale Grade to a third | Recurrence Each winter term | Version 3 |
|------------------------------------|-----------------------|--|---------------------------------------|---------------------|

| Events | | | | | |
|----------|---------|--|-------|--------------|---------|
| WT 20/21 | 2511500 | Machine Learning 1 - Fundamental Methods | 2 SWS | Lecture / 📺 | Zöllner |
| WT 20/21 | 2511501 | Exercises to Machine Learning 1 - Fundamental Methods | 1 SWS | Practice / 📺 | Zöllner |
| Exams | | | | | |
| WT 20/21 | 7900076 | Machine Learning 1 - Basic Methods (Registration until 28 February 2021) | | | Zöllner |
| ST 2021 | 7900154 | Machine Learning 1 - Basic Methods (Registration until 12 July 2021) | | | Zöllner |

Legend: 📺 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✖ Cancelled

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (20 min) following §4, Abs. 2, 2 of the examination regulation.

The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites

The course T-INFO-101354 “Machine Learning 1 - Basic Methods” must not be chosen.

Below you will find excerpts from events related to this course:

V

Machine Learning 1 - Fundamental Methods
 2511500, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)
Online**

Content

The field of knowledge acquisition and machine learning is a rapidly expanding field of knowledge and the subject of numerous research and development projects. The acquisition of knowledge can take place in different ways. Thus a system can benefit from experiences already made, it can be trained, or it draws conclusions from extensive background knowledge.

The lecture covers symbolic learning methods such as inductive learning (learning from examples, learning by observation), deductive learning (explanation-based learning) and learning from analogies, as well as sub-symbolic techniques such as neural networks, support vector machines and genetic algorithms. The lecture introduces the basic principles and structures of learning systems and examines the algorithms developed so far. The structure and operation of learning systems is presented and explained with some examples, especially from the fields of robotics and image processing.

Learning objectives:

- Students acquire knowledge of the fundamental methods in the field of machine learning.
- Students can classify, formally describe and evaluate methods of machine learning.
- Students can use their knowledge to select suitable models and methods for selected problems in the field of machine learning.

Literature

Die Foliensätze sind als PDF verfügbar

Weiterführende Literatur

- Artificial Intelligence: A Modern Approach - Peter Norvig and Stuart J. Russell
- Machine Learning - Tom Mitchell
- Pattern Recognition and Machine Learning - Christopher M. Bishop
- Reinforcement Learning: An Introduction - Richard S. Sutton and Andrew G. Barto
- Deep Learning - Ian Goodfellow, Yoshua Bengio, Aaron Courville

Weitere (spezifische) Literatur zu einzelnen Themen wird in der Vorlesung angegeben.

T

5.175 Course: Machine Learning 2 – Advanced Methods [T-WIWI-106341]

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101637 - Analytics and Statistics](#)
[M-WIWI-103356 - Machine Learning](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|----------|---------|---|-------|--------------|---------|
| ST 2021 | 2511502 | Machine Learning 2 - Advanced methods | 2 SWS | Lecture / 📱 | Zöllner |
| ST 2021 | 2511503 | Exercises for Machine Learning 2 - Advanced Methods | 1 SWS | Practice / 📱 | Zöllner |
| Exams | | | | | |
| WT 20/21 | 7900050 | Machine Learning 2 – Advanced Methods (Registration until 08 February 2021) | | | Zöllner |
| ST 2021 | 7900080 | Machine Learning 2 – Advanced Methods (Registration until 12 July 2021) | | | Zöllner |

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

Competence Certificate

Please note: in the winter semester 2020/21 the exam will be held in the form of an online Ilias exam.

As of summer semester 2021: 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

The course T-INFO-101392 “Machine Learning 2 – Advanced Methods” must not be chosen.

Below you will find excerpts from events related to this course:

V

Machine Learning 2 - Advanced methods

2511502, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

The subject area of machine intelligence and, in particular, machine learning, taking into account real challenges of complex application domains, is a rapidly expanding field of knowledge and the subject of numerous research and development projects.

The lecture "Machine Learning 2" deals with advanced methods of machine learning such as semi-supervised and active learning, deep neural networks (deep learning), pulsed networks, hierarchical approaches, e.g. As well as dynamic, probabilistic relational methods. Another focus is the embedding and application of machine learning methods in real systems.

The lecture introduces the latest basic principles as well as extended basic structures and elucidates previously developed algorithms. The structure and the mode of operation of the methods and methods are presented and explained by means of some application scenarios, especially in the field of technical (sub) autonomous systems (robotics, neurorobotics, image processing, etc.).

Learning objectives:

- Students understand extended concepts of machine learning and their possible applications.
- Students can classify, formally describe and evaluate methods of machine learning.
- In detail, methods of machine learning can be embedded and applied in complex decision and inference systems.
- Students can use their knowledge to select suitable models and methods of machine learning for existing problems in the field of machine intelligence.

Recommendations:

Attending the lecture **Machine Learning 1** or a comparable lecture is very helpful in understanding this lecture.

Literature

Die Foliensätze sind als PDF verfügbar

Weiterführende Literatur

- Artificial Intelligence: A Modern Approach - Peter Norvig and Stuart J. Russell
- Machine Learning - Tom Mitchell
- Pattern Recognition and Machine Learning - Christopher M. Bishop
- Reinforcement Learning: An Introduction - Richard S. Sutton and Andrew G. Barto
- Deep Learning - Ian Goodfellow, Yoshua Bengio, Aaron Courville

Weitere (spezifische) Literatur zu einzelnen Themen wird in der Vorlesung angegeben.

T

5.176 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 2021 | 2579900 | Management Accounting 1 | 2 SWS | Lecture / | Wouters |
| ST 2021 | 2579901 | Übung zu Management Accounting 1 (Bachelor) | 2 SWS | Practice / | Riar |
| ST 2021 | 2579902 | | 2 SWS | Practice / | Riar |
| Exams | | | | | |
| WT 20/21 | 79-2579900-B | Management Accounting 1 (Bachelor) | | | Wouters |
| WT 20/21 | 79-2579900-M | Management Accounting 1 (Mastervorzug und Master) | | | Wouters |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

Depending on further pandemic developments, the examination will be offered in the summer semester 2021 either as a 120-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites

None

Annotation

Students in the Bachelor' program can only take the related tutorial and examination. Students in the Master's program (and Bachelor's students who are already completing examinations for their Master's program) can only take the related tutorial and examination.

Below you will find excerpts from events related to this course:

V

Management Accounting 1

2579900, SS 2021, 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.

**Übung zu Management Accounting 1 (Bachelor)**

2579901, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

**Practice (Ü)
Online**

Content

see Module Handbook



2579902, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

**Practice (Ü)
Online**

Content




see Module Handbook





T

5.177 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 20/21 | 2579903 | Management Accounting 2 | 2 SWS | Lecture /  | Wouters |
| WT 20/21 | 2579904 | | 2 SWS | Practice /  | Ebinger |
| WT 20/21 | 2579905 | | 2 SWS | Practice /  | Ebinger |
| Exams | | | | | |
| WT 20/21 | 79-2579903-B | Management Accounting 2 (Bachelor) | | | Wouters |
| WT 20/21 | 79-2579903-M | Management Accounting 2 (Mastervorzug und Master) | | | Wouters |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Depending on further pandemic developments, the examination will be offered in the summer semester 2021 either as a 120-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites

None

Recommendation

It is recommended to take part in the course "Management Accounting 1" before this course.

Annotation

Students in the Bachelor' program can only take the related tutorial and examination. Students in the Master's program (and Bachelor's students who are already completing examinations for their Master's program) can only take the related tutorial and examination.

Below you will find excerpts from events related to this course:

V

Management Accounting 2

2579903, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

The course covers topics in management accounting in a decision-making framework. Some of these topics in the course MA2 are: cost estimation, product costing and cost allocation, financial performance measures, transfer pricing, strategic performance measurement systems.

We will use international material written in English.

We will approach these topics primarily from the perspective of the users of financial information (not so much from the controller who prepares the information).

The course builds on an introductory level of understanding of accounting concepts from Business Administration courses in the core program. The course is intended for students in Industrial Engineering.

Learning objectives:

- Students have an understanding of theory and applications of management accounting topics. They can use financial information for various purposes in organizations.

Recommendations:

- It is recommended to take part in the course "Management Accounting 1" before this course.

Examination:

- The assessment consists of a written exam (120 min) at the end of each semester (following § 4 (2) No. 1 of the examination regulation).

Workload:

- The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

- Marc Wouters, Frank H. Selto, Ronald W. Hilton, Michael W. Maher: Cost Management – Strategies for Business Decisions, 2012, Verlag: McGraw-Hill Higher Education (ISBN-13 9780077132392 / ISBN-10 0077132394)
- Zusätzlich werden Artikel auf ILIAS zur Vergütung gestellt.



2579904, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Practice (Ü)
Online

Content
see ILIAS



2579905, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Practice (Ü)
Online

Content
see ILIAS

T

5.178 Course: Management of IT-Projects [T-WIWI-102667]

Responsible: Dr. Roland Schätzle
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101477 - Development of Business Information Systems](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 3 |

| Events | | | | | |
|----------|---------|---|-------|--------------|----------|
| ST 2021 | 2511214 | Management of IT-Projects | 2 SWS | Lecture / 📱 | Schätzle |
| ST 2021 | 2511215 | Übungen zu Management von Informatik-Projekten | 1 SWS | Practice / 📱 | Schätzle |
| Exams | | | | | |
| WT 20/21 | 7900014 | Management of IT-Projects (Registration until 08 February 2021) | | | Oberweis |
| ST 2021 | 7900045 | Management of IT-Projects (Registration until 12 July 2021) | | | Oberweis |

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✖ Cancelled

Competence Certificate

The assessment takes place in the form of a written examination (exam) in the amount of 60 minutes. The examination is offered every semester and can be repeated at any regular examination date.

Prerequisite for the participation in the examination is the successful participation in the exercise, which takes place in the summer semester, starting from summer semester 2020. The number of participants in the exercise is limited.

The exact details will be announced in the lecture.

Prerequisites

Prerequisite for the participation in the examination is the successful participation in the exercise, which takes place in the summer semester, starting from summer semester 2020. The number of participants in the exercise is limited.

Below you will find excerpts from events related to this course:

V

Management of IT-Projects

2511214, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

The lecture deals with the general framework, impact factors and methods for planning, handling, and controlling of IT projects. Especially following topics are addressed:

- project environment
- project organisation
- project planning including the following items:
 - plan of the project structure
 - flow chart
 - project schedule
 - plan of resources
- effort estimation
- project infrastructure
- project controlling
- risk management
- feasibility studies
- decision processes, conduct of negotiations, time management.

Learning objectives:

Students

- explain the terminology of IT project management and typical used methods for planning, handling and controlling,
- apply methods appropriate to current project phases and project contexts,
- consider organisational and social impact factors.

Recommendations:

Knowledge from the lecture Software Engineering is helpful.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

Literature

- B. Hindel, K. Hörmann, M. Müller, J. Schmied. Basiswissen Software-Projektmanagement. dpunkt.verlag 2004
- Project Management Institute Standards Committee. A Guide to the Project Management Body of Knowledge (PMBOK guide). Project Management Institute. Four Campus Boulevard. Newton Square. PA 190733299. U.S.A.

**Übungen zu Management von Informatik-Projekten**

2511215, SS 2021, 1 SWS, Language: German, [Open in study portal](#)

Practice (Ü)
Online

Content

The general conditions, influencing factors and methods in the planning, execution and control of IT projects are dealt with. In particular, the following topics will be dealt with: Project environment, project organization, project structure plan, effort estimation, project infrastructure, project control, decision-making processes, negotiation, time management. The lecture is accompanied by exercises in the form of tutorials. The date of the exercise will be announced later.

T

5.179 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 | Each summer term | 2 |

| Events | | | | | |
|----------|---------|---|-------|-----------|------|
| ST 2021 | 2545003 | Managing New Technologies | 2 SWS | Lecture / | Reiß |
| Exams | | | | | |
| WT 20/21 | 7900189 | Managing New Technologies | | | Reiß |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

Written exam 100% following §4, Abs. 2.

Prerequisites

None

Recommendation

None

Annotation

The credit points for T-WIWI-102612 "Management of New Technologies" were reduced to 3 credit points in the 2019 summer semester.

Below you will find excerpts from events related to this course:

V

Managing New Technologies

2545003, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

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

5.180 Course: Market Engineering: Information in Institutions [T-WIWI-102640]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101409 - Electronic Markets](#)
[M-WIWI-101446 - Market Engineering](#)
[M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-102754 - Service Economics and Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|--|-------|--|-------------------|
| ST 2021 | 2540460 | Market Engineering: Information in Institutions | 2 SWS | Lecture /  | Weinhardt, Straub |
| ST 2021 | 2540461 | Übungen zu Market Engineering: Information in Institutions | 1 SWS | Practice /  | Golla |

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

Below you will find excerpts from events related to this course:

V

Market Engineering: Information in Institutions

2540460, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

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

5.181 Course: Market Research [T-WIWI-107720]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101510 - Cross-Functional Management Accounting](#)
[M-WIWI-101647 - Data Science: Evidence-based Marketing](#)
[M-WIWI-105312 - Marketing and Sales Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---------|---------|--|-------|--|----------|
| ST 2021 | 2571150 | Market Research | 2 SWS | Lecture /  | Klarmann |
| ST 2021 | 2571151 | Market Research Tutorial | 1 SWS | Practice /  | Honold |
| Exams | | | | | |
| ST 2021 | 7900015 | Market Research | | | Klarmann |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment is carried out (according to §4(2), 3 SPO) in the form of a written open book exam. In the summer term 2021, the written open book exam will either take place in the lecture hall or online, depending on further pandemic developments.

Further details on the open book exam will be announced in 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 2021, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)
Online**

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.

**5.182 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 20/21 | 2572170 | Marketing Analytics | 2 SWS | Lecture / | Klarmann |
| WT 20/21 | 2572171 | Marketing Analytics Tutorial | 1 SWS | Practice / | Klarmann |
| Exams | | | | | |
| WT 20/21 | 7900082 | Marketing Analytics | | | Klarmann |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

Alternative exam assessment (Working on tasks in groups during the lecture).

Prerequisites

The prerequisite for taking the course is the successful completion of the course "Market Research".

Recommendation

It is strongly recommended to complete the course "Market Research" prior to taking the "Marketing Analytics" course.

Annotation

"Marketing Analytics" will be offered as a block course in the winter term 20/21 with an alternative exam assessment.

For further information please contact the Marketing and Sales Research Group (marketing.iism.kit.edu). Exchange students can bypass the requirement of passing Market Research if they can prove that they possess sufficient statistical knowledge based on courses attended at their home institution. This will be examined individually by the Marketing & Sales Research Group.*Below you will find excerpts from events related to this course:***Marketing Analytics**2572170, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)**Lecture (V)
Online****Content**

In this course various relevant market research questions are addressed, as for example measuring and understanding customer attitudes, preparing strategic decisions and sales forecasting. In order to analyze these questions, students learn to handle social media data, panel data, nested observations and experimental design. To analyze the data, advanced methods, as for example multilevel modeling, structural equation modeling and return on marketing models are taught. Also, problems of causality are addressed in-depth. The lecture is accompanied by a computer-based exercise, in the course of which the methods are applied practically.

Students

- receive based on the course market research an overview of advanced empirical methods
- learn in the course of the lecture to handle advanced data collection and data analysis methods
- are based on the acquired knowledge able to interpret results and derive strategic implications

Total workload for 4.5 ECTS: ca. 135 hours.

In order to attend Marketing Analytics, students are required to have passed the course Market Research.

Exchange students can bypass the requirement of passing Market Research if they can prove that they possess sufficient statistical knowledge based on courses attended at their home institution. This will be examined individually by the Marketing & Sales Research Group.

For further information please contact the Marketing and Sales Research Group (marketing.iism.kit.edu).

Organizational issues

Blockveranstaltung

Literature

- Hanssens, Dominique M., Parsons, Leonard J., Schultz, Randall L. (2003), Market response models: Econometric and time series analysis, 2nd ed, Boston.
- Gelman, Andrew, Hill, Jennifer (2006), Data analysis using regression and multilevel/hierarchical models, New York.
- Cameron, A. Colin, Trivedi, Pravin K. (2005), Microeconometrics: methods and applications, New York.
- Chapman, Christopher, Feit, Elea M. (2015), R for Marketing Research and Analytics, Cham.
- Ledolter, Johannes (2013), Data mining and business analytics with R, New York.

T

5.183 Course: Marketing Strategy Business Game [T-WIWI-102835]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101510 - Cross-Functional Management Accounting](#)
[M-WIWI-105312 - Marketing and Sales Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 1,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|--|-------|---------|-----------------------|
| ST 2021 | 2571183 | Marketing Strategy Business Game | 1 SWS | Block / | Klarmann, Mitarbeiter |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

The assessment (alternative exam assessment) consists of a group presentation and a subsequent round of questions totalling 20 minutes.

Prerequisites

None

Recommendation

None

Annotation

Please note that only one of the courses from the election block can be chosen in the module.

Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1.5 ECTS points in the respective module to all students. Participation in a specific course cannot be guaranteed.

In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in summer term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the lecture period in summer term starts.

Below you will find excerpts from events related to this course:

V

Marketing Strategy Business Game

2571183, SS 2021, 1 SWS, Language: German, [Open in study portal](#)

Block (B)
Online

Content

Using Markstrat, a marketing strategy business game, students work in groups representing a company that competes on a simulated market against the other groups' companies.

Students

- are able to operate the strategic marketing simulation software "Markstrat"
- are able to take strategic marketing decisions in groups
- know how to apply strategic marketing concepts to practical contexts (e.g. for market segmentation, product launches, coordination of the marketing mix, market research, choice of the distribution channel or competitive behavior)
- are capable to collect and to select information usefully with the aim of decision-making
- are able to react appropriately to predetermined market conditions
- know how to present their strategies in a clear and consistent way
- are able to talk about the success, problems, critical incidents, external influences and strategy changes during the experimental game and to reflect and present their learning success

Non exam assessment (following §4(2), 3 of the examination regulation).

The total workload for this course is approximately 45.0 hours. For further information see German version.

- Please note that only one of the courses from the election block can be chosen in the module.
- Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1.5 ECTS in the respective module to all students. Participation in a specific course cannot be guaranteed.
- In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in summer term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the lecture period in summer term starts.

Organizational issues

Termine werden bekannt gegeben

Literature

Homburg, Christian (2016), Marketingmanagement, 6. Aufl., Wiesbaden.

T

5.184 Course: Master Thesis [T-WIWI-103142]

Responsible: Studiendekan der KIT-Fakultät für Informatik
Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101656 - Module Master 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:

| | |
|---------------------------------|----------|
| Submission deadline | 6 months |
| Maximum extension period | 3 months |
| Correction period | 8 weeks |

T

5.185 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](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------|---------|
| Oral examination | 4,5 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|---------|---------|---|-------|------------|----------------|
| ST 2021 | 2550562 | Mathematische Grundlagen hochdimensionaler Statistik | 2 SWS | Lecture / | Grothe |
| ST 2021 | 2550563 | Übung zu Mathematische Grundlagen hochdimensionaler Statistik | 2 SWS | Practice / | Grothe, Rieger |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

The assessment consists of an oral exam (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.

Below you will find excerpts from events related to this course:

V

Mathematische Grundlagen hochdimensionaler Statistik

2550562, SS 2021, 2 SWS, [Open in study portal](#)

Lecture (V)
Online

Content

Content:

The lecture focuses on modelling statistical objects (random vectors, random matrices and random graphs) in high dimensions. It deals with concentration inequalities that limit the fluctuations of such objects as well as complexity measures for quantities and functions. The theory is transferred to well-known and widespread applications such as neighbourhood detection in networks, statistical learning theory and LASSO.

Learning objectives:

Students are able to


- name and justify statistical properties of high-dimensional objects (vectors, matrices, functions).
- describe and explain differences in the behaviour between low- and high-dimensional random objects.
- name procedures for assess uncertainties in statistical models and apply them in simple examples.
- decide well-founded which modeling of high-dimensional structures is best suited in a specific situation.
- transform data into lower dimensions and quantify approximation errors.
- understand basic proofs in high-dimensional statistics using examples.
- develop, implement and evaluate smaller simulations in a programming language of their choice.





T

5.186 Course: Meshes and Point Clouds [T-INFO-101349]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-100812 - Meshes and Point Clouds](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------|---------|
| Oral examination | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|---------|---------|---------------------------------------|-------|---|-----------|
| ST 2021 | 2400029 | Netze und Punktwolken | 2 SWS | Lecture /  | Prautzsch |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.187 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 2021 | 2560240 | Methods in Economic Dynamics | 1 SWS | Lecture / | Ott, Scheu |
| Exams | | | | | |
| ST 2021 | 7900108 | Methods in Economic Dynamics | | | 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:

V

Methods in Economic Dynamics

2560240, SS 2021, 1 SWS, Language: German/English, [Open in study portal](#)

Lecture (V)
Online

Content

The economic exploitation of inventions is an important part of innovation economics. Intellectual property rights such as patents or trademarks play a central role. Within this workshop, the recording, processing and analysis of such intellectual property rights will be deepened, e.g. considering specific technologies. Students will learn how to work with relational databases, the econometric evaluation of recorded data, and methods for visualising them.

Learning objectives:

The student

- learns to query data sources.
- is able to analyse data with statistical methods.
- visualises and interprets data evaluations (e.g. using dashboards or methods of network analysis).

Recommendations:

An interest in working with data, basic knowledge on databases as well as basic knowledge in economics and statistics are advantageous.

Workload:

The total workload for this course is approximately 45 hours.

- Classes: ca. 5 h
- Self-study: ca. 40 h

Assessment:

Non exam assessment according to § 4 paragraph 3 of the examination regulation (SPO 2015).

Literature


Relevante Literatur wird in der Vorlesung bekanntgegeben.
(Relevant literature will be announced in the lecture.)





T

5.188 Course: Methods in Innovation Management [T-WIWI-110263]

Responsible: Dr. Daniel Jeffrey Koch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---|--------------------|---|------|
| WT 20/21 | 2545107 | Methoden im Innovationsmanagement | 2 SWS | Seminar /  | Koch |
| Exams | | | | | |
| WT 20/21 | 7900306 | Methods in Innovation Management | Weissenberger-Eibl | | |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Alternative exam assessments (§4(2), 3 SPO). The final grade is composed 75% of the grade of the written paper and 25% of the grade of the presentation.

Prerequisites

None.

Recommendation

Prior attendance of the course "Innovation Management: Concepts, Strategies and Methods" is recommended.

Below you will find excerpts from events related to this course:

V

Methoden im Innovationsmanagement

2545107, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

The seminar "Methods in Innovation Management" aims at the discussion and development of different methods for the structured generation of ideas in selected contexts. In a block seminar, methods and contexts are discussed, from which seminar topics are defined with the participants. These topics are to be worked on independently using methods and procedures. The results will be presented at a presentation date and then a written seminar paper will be prepared. This means that creativity methods and their combination will be presented and applied. The methods are worked on in a structured form and process-like sequence in order to clarify the advantages and disadvantages of different methods.

Literature

Werden in der ersten Veranstaltung bekannt gegeben.



5.189 Course: Mixed Integer Programming I [T-WIWI-102719]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)
[M-WIWI-102832 - Operations Research in Supply Chain Management](#)
[M-WIWI-103289 - Stochastic Optimization](#)

| Type | 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.

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.ior.kit.edu).

T

5.190 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 |

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).

T


5.191 Course: Mobile Communication [T-INFO-101322]





Responsible: Prof. Dr. Oliver Waldhorst
Prof. Dr. Martina Zitterbart

Organisation: KIT Department of Informatics

Part of: [M-INFO-100785 - Mobile Communication](#)
[M-INFO-101203 - Wireless Networking](#)
[M-INFO-101205 - Future Networking](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 4 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|-----------------------|
| WT 20/21 | 24643 | Mobile Communications | 2 SWS | Lecture /  | Waldhorst, Jung |
| Exams | | | | | |
| WT 20/21 | 7500015 | Mobile Communication | | | Waldhorst, Zitterbart |
| WT 20/21 | 7500294 | Mobile Communication für Wiederholer | | | Waldhorst, Zitterbart |
| ST 2021 | 7500073 | Mobile Communication | | | Waldhorst, Zitterbart |


Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled





T

5.192 Course: Model Driven Software Development [T-INFO-101278]

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: [M-INFO-101201 - Software Systems](#)
[M-INFO-101202 - Software Methods](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|------------------|
| WT 20/21 | 24657 | Model-Driven Software Engineering | 2 SWS | Lecture /  | Burger |
| Exams | | | | | |
| WT 20/21 | 7500086 | Model Driven Software Development | | | Reussner, Burger |
| ST 2021 | 7500016 | Model Driven Software Development | | | Burger, Reussner |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.193 Course: Modeling and Analyzing Consumer Behavior with R [T-WIWI-102899]

Responsible: Dr. Verena Dorner
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101448 - Service Management](#)
[M-WIWI-101506 - Service Analytics](#)
[M-WIWI-103118 - Data Science: Data-Driven User Modeling](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|---|-------|------------|---------------------|
| ST 2021 | 2540470 | Modeling and Analyzing Consumer Behavior with R | 2 SWS | Lecture / | Knierim |
| ST 2021 | 2540471 | Übung zu Modeling and Analyzing Consumer Behaviour with R | 1 SWS | Practice / | Knierim, Giebenhain |

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

Number of participants limited.

Below you will find excerpts from events related to this course:

V

Modeling and Analyzing Consumer Behavior with R

2540470, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Literature

Field, A., Miles, J., Field, Z., Discovering Statistics Using R, SAGE 2014

Jones, O., Maillardet, R., Robinson, A., Scientific Programming and Simulation Using R, Chapman & Hall / CRC Press 2009

Venables, W.N., Smith, D.M. and the R Core Team, "An Introduction to R", 2012 (Version 2.15.2), <http://cran.r-project.org/doc/manuals/R-intro.pdf>

Wickham, Hadley, ggplot2: Elegant Graphics for Data Analysis (Use R!), Springer 2009 (2nd edition)

T 5.194 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 |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|----------|---------|--|-------|--------------------|--------|
| WT 20/21 | 2550490 | Modellieren und OR-Software: Fortgeschrittene Themen | 3 SWS | Practical course / | Bakker |
| Exams | | | | | |
| WT 20/21 | 7900345 | Modeling and OR-Software: Advanced Topics | | | Nickel |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

The assessment is a 120 minutes examination, including a written and a practical part (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the software laboratory and the following term.

Prerequisites

None.

Recommendation

Basic knowledge as conveyed in the module *Introduction to Operations Research* is assumed.

Successful completion of the course *Modeling and OR-Software: Introduction*.

Annotation

Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The lecture is held in every term. The planned lectures and courses for the next three years are announced online.

Below you will find excerpts from events related to this course:

| | | |
|----------|--|---|
| V | <p>Modellieren und OR-Software: Fortgeschrittene Themen 2550490, WS 20/21, 3 SWS, Language: German, Open in study portal</p> | <p>Practical course (P) Online</p> |
|----------|--|---|

Content

The advanced course is designated for Master students that already attended the introductory course or gained equivalent experience elsewhere, e.g. during a seminar or bachelor thesis. We will work on advanced topics and methods in OR, among others cutting planes, column generation and constraint programming. The Software used for the exercises is IBM ILOG CPLEX Optimization Studio. The associated modelling programming languages are OPL and ILOG Script.

Organizational issues


die genauen Termine werden auf der Homepage bekannt gegeben





T

5.195 Course: Models of Parallel Processing [T-INFO-101365]

Responsible: Thomas Worsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-100828 - Models of Parallel Processing](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|----------|--|-------|---|-----------------|
| ST 2021 | 24606 | Modelle der Parallelverarbeitung | 3 SWS | Lecture /  | Worsch, Vollmar |
| Exams | | | | | |
| WT 20/21 | 75400003 | Models of Parallel Processing | | | Worsch |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**5.196 Course: Multivariate Statistical Methods [T-WIWI-103124]**

Responsible: Prof. Dr. Oliver Grothe
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)
[M-WIWI-101637 - Analytics and Statistics](#)
[M-WIWI-101639 - Econometrics and Statistics II](#)
[M-WIWI-103289 - Stochastic Optimization](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|---|-------|------------|-----------------|
| ST 2021 | 2550554 | Multivariate Verfahren | 2 SWS | Lecture / | Grothe |
| ST 2021 | 2550555 | Übung zu Multivariate Verfahren | 2 SWS | Practice / | Grothe, Kächele |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

Depending on further pandemic developments, the examination will be offered in the summer semester 2021 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).

A bonus program can improve the grade by one grade level (i.e. by 0.3 or 0.4).

The exam is offered every semester. Re-examinations are offered only for repeaters.

Prerequisites

None

Recommendation

The course covers highly advanced statistical methods with a quantitative focus. Hence, participants are necessarily expected to have advanced statistical knowledge, e.g. acquired in the course "Advanced Statistics". Without this, participation in the course is not advised.

Previous attendance of the course Analysis of Multivariate Data is recommended. Alternatively, the script can be provided to interested students.

Below you will find excerpts from events related to this course:

**Multivariate Verfahren**

2550554, SS 2021, 2 SWS, [Open in study portal](#)

Lecture (V)
Online

Literature


Skript zur Vorlesung





T

5.197 Course: Network Security: Architectures and Protocols [T-INFO-101319]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [M-INFO-100782 - Network Security: Architectures and Protocols](#)
[M-INFO-101203 - Wireless Networking](#)
[M-INFO-101204 - Networking Labs](#)
[M-INFO-101206 - Networking](#)
[M-INFO-101207 - Networking Security - Theory and Praxis](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 4 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|---------------------------------------|
| ST 2021 | 24601 | Netsicherheit: Architekturen und Protokolle | 2 SWS | Lecture /  | Baumgart, Bless, Heseding, Zitterbart |
| Exams | | | | | |
| WT 20/21 | 7500014 | Network Security: Architectures and Protocols | | | Zitterbart, Bless |
| WT 20/21 | 7500299 | Network Security: Architectures and Protocols für Wiederholer | | | Zitterbart, Bless |
| ST 2021 | 7500072 | Network Security: Architectures and Protocols | | | Zitterbart |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T


5.198 Course: Next Generation Internet [T-INFO-101321]





Responsible: Dr.-Ing. Roland Bless
Prof. Dr. Martina Zitterbart

Organisation: KIT Department of Informatics

Part of: [M-INFO-101205 - Future Networking](#)
[M-INFO-101206 - Networking](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 4 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|-------------------|
| ST 2021 | 24674 | Next Generation Internet | 2 SWS | Lecture /  | Bless |
| Exams | | | | | |
| WT 20/21 | 7500016 | Next Generation Internet | | | Bless, Zitterbart |
| ST 2021 | 7500074 | Next Generation Internet | | | Bless, Zitterbart |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Below you will find excerpts from events related to this course:

V

Next Generation Internet

24674, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

The lecture focuses on current developments in Internet-based network technologies. First, architectural principles of today's Internet are presented and discussed, subsequently nowadays and future challenges are motivated. Methods for quality-of-service support and transport of multi-media stream as well as newer transport protocols and group communication support are presented. Deployment of the presented technologies in IP-based networks are discussed. The lecture presents advanced approaches such as programmable networks and network virtualization as well as newer approaches and protocols for routing, satellite networking, and peer-to-peer networks.

Literature

James F. Kurose, and Keith W. Ross *Computer Networking* 6th edition, Addison-Wesley/Pearson, 2013, ISBN 978-0-273-76896-8, Chapters 1, 2.6 (P2P), 4 (Network Layer), 7.5 (Scheduling, IntServ, DiffServ, RSVP)

Weiterführende Literatur

wird in der Vorlesung bekanntgegeben.

T

5.199 Course: Non- and Semiparametrics [T-WIWI-103126]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101638 - Econometrics and Statistics I](#)
[M-WIWI-101639 - Econometrics and Statistics II](#)

| Type | Credits | 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

T

5.200 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 20/21 | 2550111 | Nonlinear Optimization I | 2 SWS | Lecture / 📱 | Stein |
| WT 20/21 | 2550112 | Exercises Nonlinear Optimization I + II | | Practice / 📱 | Stein |
| Exams | | | | | |
| WT 20/21 | 7900086_WS2021_HK | Nonlinear Optimization I | | | 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:

V

Nonlinear Optimization I

2550111, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

The lecture treats the minimization of smooth nonlinear functions without constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality conditions
- Algorithms (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *with* constraints forms the contents of the lecture "Nonlinear Optimization II". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of unconstrained nonlinear optimization,
- is able to choose, design and apply modern techniques of unconstrained nonlinear optimization in practice.

Literature

O. Stein, Grundzüge der Nichtlinearen Optimierung, SpringerSpektrum, 2018

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T 5.201 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 Written examination | Credits 9 | Grading scale Grade to a third | Recurrence Each winter term | Version 6 |
|------------------------------------|---------------------|--|---------------------------------------|---------------------|

| Events | | | | | |
|----------|-------------------|---|-------|--------------|-------|
| WT 20/21 | 2550111 | Nonlinear Optimization I | 2 SWS | Lecture / 📱 | Stein |
| WT 20/21 | 2550112 | Exercises Nonlinear Optimization I + II | | Practice / 📱 | Stein |
| WT 20/21 | 2550113 | Nonlinear Optimization II | 2 SWS | Lecture / 📱 | Stein |
| Exams | | | | | |
| WT 20/21 | 7900088_WS2021_HK | Nonlinear Optimization I and II | | | 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.

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.

Below you will find excerpts from events related to this course:

V

Nonlinear Optimization I

2550111, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

The lecture treats the minimization of smooth nonlinear functions without constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality conditions
- Algorithms (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *with* constraints forms the contents of the lecture "Nonlinear Optimization II". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of unconstrained nonlinear optimization,
- is able to choose, design and apply modern techniques of unconstrained nonlinear optimization in practice.

Literature

O. Stein, Grundzüge der Nichtlinearen Optimierung, SpringerSpektrum, 2018

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

**Nonlinear Optimization II**

2550113, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions
- Algorithms (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *without* constraints forms the contents of the lecture "Nonlinear Optimization I". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of constrained nonlinear optimization,
- is able to choose, design and apply modern techniques of constrained nonlinear optimization in practice.

Literature

O. Stein, Grundzüge der Nichtlinearen Optimierung, SpringerSpektrum, 2018

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T

5.202 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 20/21 | 2550112 | Exercises Nonlinear Optimization I + II | | Practice / 📱 | Stein |
| WT 20/21 | 2550113 | Nonlinear Optimization II | 2 SWS | Lecture / 📱 | Stein |
| Exams | | | | | |
| WT 20/21 | 7900087_WS2021_HK | Nonlinear Optimization II | | | 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.

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 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions
- Algorithms (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *without* constraints forms the contents of the lecture "Nonlinear Optimization I". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of constrained nonlinear optimization,
- is able to choose, design and apply modern techniques of constrained nonlinear optimization in practice.

Literature

O. Stein, Grundzüge der Nichtlinearen Optimierung, SpringerSpektrum, 2018

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T

5.203 Course: Operations Research in Health Care Management [T-WIWI-102884]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-102805 - Service Operations](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 4,5 | Grade to a third | Irregular | 2 |

| Exams | | | |
|----------|---------|---|--------|
| WT 20/21 | 7900344 | Operations Research in Health Care Management | 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

5.204 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 |

| Events | | | | | |
|----------|---------|--|-------|------------|--------|
| WT 20/21 | 2550480 | Operations Research in Supply Chain Management | 2 SWS | Lecture / | Nickel |
| WT 20/21 | 2550481 | Übungen zu OR in Supply Chain Management | 1 SWS | Practice / | Dunke |
| Exams | | | | | |
| WT 20/21 | 7900343 | Operations Research in Supply Chain Management | | | Nickel |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the lecture and the following lecture.

Prerequisites

None

Recommendation

Basic knowledge as conveyed in the module Introduction to Operations Research and in the lectures Facility Location and Strategic SCM, Tactical and operational SCM is assumed.

Annotation

The course is offered irregularly. Planned lectures for the next three years can be found in the internet at <http://dol.iior.kit.edu/english/Courses.php>.

Below you will find excerpts from events related to this course:

V

Operations Research in Supply Chain Management

2550480, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

Supply Chain Management constitutes a general tool for logistics process planning in supply networks. To an increasing degree quantitative decision support is provided by methods and models from Operations Research. The lecture "OR in Supply Chain Management" conveys concepts and approaches for solving practical problems and presents an insight to current research topics. The lecture's focus is set on modeling and solution methods for applications originating in different domains of a supply chain. The emphasis is put on mathematical methods like mixed integer programming, valid inequalities or column generation, and the derivation of optimal solution strategies.

In form and content, the lecture addresses all levels of Supply Chain Management: After a short introduction, the tactical and operational level will be discussed with regard to inventory models, scheduling as well as cutting and packing. The strategic level will be discussed in terms of layout planning. Another main focus of the lecture is the application of methods from online optimization. This optimization discipline has gained more and more importance in the optimization of supply chains over the several past years due to an increasing amount of dynamic data flows.

Literature


- Simchi-Levi, D.; Chen, X.; Bramel, J.: The Logic of Logistics: Theory, Algorithms, and Applications for Logistics and Supply Chain Management, 2nd edition, Springer, 2005
- Simchi-Levi, D.; Kaminsky, P.; Simchi-Levi, E.: Designing and Managing the Supply Chain: Concepts, Strategies, and Case Studies, McGraw-Hill, 2000
- Silver, E. A.; Pyke, D. F.; Peterson, R.: Inventory Management and Production Planning and Scheduling, 3rd edition, Wiley, 1998
- Blazewicz, J.: Handbook on Scheduling - From Theory to Applications, Springer, 2007
- Pinedo, M. L.: Scheduling - Theory, Algorithms, and Systems (3rd edition), Springer, 2008
- Dyckhoff, H.; Finke, U.: Cutting and Packing in Production and Distribution - A Typology and Bibliography, Physica-Verlag, 1992
- Borodin, A.; El-Yaniv, R.: Online Computation and Competitive Analysis, Cambridge University Press, 2005
- Francis, R. L.; McGinnis, L. F.; White, A.: Facility Layout and Location: An Analytical Approach, 2nd edition, Prentice-Hall, 1992





T

5.205 Course: Optimization Models and Applications [T-WIWI-110162]

Responsible: Dr. Nathan Sudermann-Merx
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)
[M-WIWI-102832 - Operations Research in Supply Chain Management](#)
[M-WIWI-103289 - Stochastic Optimization](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|-----------------|---------|
| Written examination | 4,5 | Grade to a third | see Annotations | 1 |

| Events | | | | | |
|----------|-------------------|--|-------|---|-----------------------|
| WT 20/21 | 2550140 | Optimization Models and Application | 2 SWS | Lecture /  | Sudermann-Merx, Stein |
| Exams | | | | | |
| WT 20/21 | 7900090_WS2021_HK | Optimization Models and Applications | | | Stein |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The examination will take place for the last time in the winter semester 2020/2021.

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

The prerequisite for participation in the exam is the achievement of a minimum number of points in delivery sheets. Details will be announced at the beginning of the course.

Prerequisites

None.

Annotation




The course will take place for the last time in the winter semester 20/21.




T

5.206 Course: Optimization under Uncertainty [T-WIWI-106545]

Responsible: Prof. Dr. Steffen Rebennack**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-103243 - Optimization under Uncertainty in Information Engineering and Management](#)
[M-WIWI-103289 - Stochastic Optimization](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 5 | Grade to a third | Each winter term | 3 |

| Events | | | | | |
|----------|---------|---|-------|--|--------------------|
| WT 20/21 | 2550464 | Optimierungsansätze unter Unsicherheit | | Lecture /  | Rebennack |
| WT 20/21 | 2550465 | Übungen zu Optimierungsansätze unter Unsicherheit | | Practice /  | Rebennack, Füllner |
| WT 20/21 | 2550466 | | 2 SWS | Practice /  | Rebennack, Füllner |
| Exams | | | | | |
| WT 20/21 | 7900240 | Optimization under Uncertainty | | | 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

5.207 Course: Panel Data [T-WIWI-103127]

Responsible: apl. Prof. Dr. Wolf-Dieter Heller
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101638 - Econometrics and Statistics I](#)
[M-WIWI-101639 - Econometrics and Statistics II](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|---------------------------------------|-------|--|--------|
| ST 2021 | 2520320 | Panel Data | 2 SWS | Lecture /  | Heller |
| ST 2021 | 2520321 | Übungen zu Paneldaten | 2 SWS | Practice /  | Heller |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Panel Data

2520320, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

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

5.208 Course: Parallel Algorithms [T-INFO-101333]

Responsible: Prof. Dr. Peter Sanders**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100796 - Parallel Algorithms](#)[M-INFO-101199 - Advanced Algorithms: Design and Analysis](#)[M-INFO-101200 - Advanced Algorithms: Engineering and Applications](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|-------------------------------------|---------|---|-----------------------|
| WT 20/21 | 2400053 | Parallel Algorithms | 2/1 SWS | Lecture /  | Sanders, Hespe, Funke |
| Exams | | | | | |
| WT 20/21 | 75489 | Parallel Algorithms | | | Sanders |


Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.209 Course: Parallel Computer Systems and Parallel Programming [T-INFO-101345]

Responsible: Prof. Dr. Achim Streit
Organisation: KIT Department of Informatics
Part of: [M-INFO-101210 - Dynamic IT-Infrastructures](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 4 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|----------------|
| ST 2021 | 24617 | Parallel computer systems and parallel programming | 2 SWS | Lecture /  | Streit, Häfner |
| Exams | | | | | |
| WT 20/21 | 7500241 | Parallel computer systems and parallel programming | | | Streit |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.210 Course: Parametric Optimization [T-WIWI-102855]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101473 - Mathematical Programming](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 4,5 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|----------|-------------------|--|-------|------------|----------------|
| WT 20/21 | 2550115 | Parametric Optimization | 2 SWS | Lecture / | Stein |
| WT 20/21 | 2550116 | Übung zu Parametrische Optimierung | 2 SWS | Practice / | Stein, Neumann |
| Exams | | | | | |
| WT 20/21 | 7900089_WS2021_HK | Parametric Optimization | 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 lecture is offered irregularly. The curriculum of the next three years is available online (www.ior.kit.edu).

Below you will find excerpts from events related to this course:

V

Parametric Optimization

2550115, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

Parametric optimization deals with the influence of parameters on the solution of optimization problems. In optimization practice, such investigations play a fundamental role in order to be able to assess the quality of a numerically obtained solution or to make quantitative statements about its parameter dependence. Furthermore, a number of parametric optimization methods exist, and parametric problems occur in applications such as game theory, geometric optimization problems, and robust optimization. The lecture gives a mathematically sound introduction to these topics and is structured as follows:

- Introductory examples and terminology
- Sensitivity
- Stability and regularity conditions
- Applications: semi-infinite optimization and Nash games

Remark:

Prior to the attendance of this lecture, it is strongly recommend to acquire basic knowledge on optimization problems in one of the lectures "Global Optimization I and II" and "Nonlinear Optimization I and II".

Learning objectives:

The student

- knows and understands the fundamentals of parametric optimization,
- is able to choose, design and apply modern techniques of parametric optimization in practice.

Literature

- J.F. Bonnans, A. Shapiro, Perturbation Analysis of Optimization Problems, Springer, New York, 2000
- W. Dinkelbach, Sensitivitätsanalysen und parametrische Programmierung, Springer, Berlin, 1969
- J. Guddat, F. Guerra Vasquez, H.Th. Jongen, Parametric Optimization: Singularities, Pathfollowing and Jumps, Wiley, Chichester, and Teubner, Stuttgart, 1990
- R.T. Rockafellar, R.J.B. Wets, Variational Analysis, Springer, Berlin, 1998

T


5.211 Course: Patent Law [T-INFO-101310]

Responsible: Markus Hössle
Matthias Koch

Organisation: KIT Department of Informatics

Part of: [M-INFO-101215 - Intellectual Property Law](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|----------|---------|----------------------------|-------|---|--------------|
| ST 2021 | 24656 | Patent Law | 2 SWS | Lecture /  | Hössle |
| Exams | | | | | |
| WT 20/21 | 7500001 | Patent Law | | | Dreier, Matz |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.212 Course: Pattern Recognition [T-INFO-101362]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: [M-INFO-100825 - Pattern Recognition](#)
[M-INFO-101239 - Machine Vision](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|-------------------------------------|-------|-----------|---------|
| ST 2021 | 24675 | Pattern Recognition | 2 SWS | Lecture / | Beyerer |
| Exams | | | | | |
| WT 20/21 | 7500111 | Pattern Recognition | | | Beyerer |
| ST 2021 | 7500032 | Pattern Recognition | | | Beyerer |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Below you will find excerpts from events related to this course:

V

Pattern Recognition

24675, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Literature

Weiterführende Literatur

- Richard O. Duda, Peter E. Hart, Stork G. David. Pattern Classification. Wiley-Interscience, second edition, 2001
- K. Fukunaga. Introduction to Statistical Pattern Recognition. Academic Press, second edition, 1997
- R. Hoffman. Signalanalyse und -erkennung. Springer, 1998
- H. Niemann. Pattern analysis and understanding. Springer, second edition, 1990
- J. Schürmann. Pattern classification. Wiley & Sons, 1996
- S. Theodoridis, K. Koutroubas. Pattern recognition. London: Academic, 2003
- V. N. Vapnik. The nature of statistical learning theory. Springer, second edition, 2000

T

5.213 Course: Personalization and Services [T-WIWI-102848]

Responsible: Andreas Sonnenbichler

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101410 - Business & Service Engineering](#)

[M-WIWI-101470 - Data Science: Advanced CRM](#)

[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 | see Annotations | 1 |

| Events | | | | | |
|----------|---------|---|-------|----------|-----------------------------|
| WT 20/21 | 2540533 | Personalization & Services | 2 SWS | Lecture | Sonnenbichler, Geyer-Schulz |
| WT 20/21 | 2540534 | Exercise Personalization & Services | 1 SWS | Practice | Sonnenbichler, Geyer-Schulz |
| Exams | | | | | |
| WT 20/21 | 7900365 | Personalization and Services | | | Geyer-Schulz |

Competence Certificate

The exam is currently not offered.

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 course is currently not offered.

Below you will find excerpts from events related to this course:

V

Personalization & Services

2540533, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature



Die Vorlesung orientiert sich an aktuellen wissenschaftlichen Veröffentlichungen. Die Literaturliste finden Sie nach Themen gegliedert jeweils am Ende der Vorlesungseinheiten.





T

5.214 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 20/21 | 2581952 | Planning and Management of Industrial Plants | 2 SWS | Lecture /  | Glöser-Chahoud, Schultmann |
| WT 20/21 | 2581953 | Übungen Anlagenwirtschaft | 2 SWS | Practice /  | Glöser-Chahoud, Heck, Heinzmann |
| Exams | | | | | |
| WT 20/21 | 7981952 | Planning and Management of Industrial Plants | | | 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

Planning and Management of Industrial Plants

2581952, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

Industrial plant management incorporates a complex set of tasks along the entire life cycle of an industrial plant, starting with the initiation and erection up to operating and dismantling.

During this course students will get to know special characteristics of industrial plant management. Students will learn important methods to plan, realize and supervise the supply, start-up, maintenance, optimisation and shut-down of industrial plants. Alongside, students will have to handle the inherent question of choosing between technologies and evaluating each of them. This course pays special attention to the specific characteristics of plant engineering, commissioning and investment.

Literature



Wird in der Veranstaltung bekannt gegeben.

T

5.215 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 2021 | 2520357 | Portfolio and Asset Liability Management | 2 SWS | Lecture /  | Safarian |
| ST 2021 | 2520358 | Übungen zu Portfolio and Asset Liability Management | 2 SWS | Practice /  | Safarian |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment of this course consists of a written examination (following §4(2), 1 SPOs, 180 min.).

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Portfolio and Asset Liability Management

2520357, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content**Learning objectives:**

Knowledge of various portfolio management techniques in the financial industry.

Content:

Portfolio theory: principles of investment, Markowitz- portfolio analysis, Modigliani-Miller theorems and absence of arbitrage, efficient markets, capital asset pricing model (CAPM), multi factorial CAPM, arbitragepricing theory (APT), arbitrage and hedging, multi factorial models, equity-portfolio management, passive strategies, active investment

Asset liability: statistical portfolio analysis in stock allocation, measures of success, dynamic multi seasonal models, models in building scenarios, stochastic programming in bond and liability management, optimal investment strategies, integrated asset liability management

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Exam preparation: 40 hours

Organizational issues

Blockveranstaltung

Literature

To be announced in the lecture

T

5.216 Course: Practical Course Computer Vision for Human-Computer Interaction [T-INFO-105943]

Responsible: Prof. Dr.-Ing. Rainer Stiefelhagen

Organisation: KIT Department of Informatics

Part of: [M-INFO-101239 - Machine Vision](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 6 | Grade to a third | Each summer term | 3 |


| Exams | | | |
|----------|---------|---|--------------|
| WT 20/21 | 7500136 | Practical Course Computer Vision for Human-Computer Interaction | Stiefelhagen |





T

5.217 Course: Practical Course Protocol Engineering [T-INFO-104386]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [M-INFO-101206 - Networking](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---|-------|--|-------------------|
| WT 20/21 | 2400086 | Protocol Engineering | 4 SWS | Practical course /  | Bauer, Zitterbart |
| Exams | | | | | |
| WT 20/21 | 7500002 | Practical Course Protocol Engineering | | | Zitterbart |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.218 Course: Practical Course: Analysis of Complex Data Sets [T-INFO-105796]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101256 - Theory and Practice of Data Warehousing and Mining](#)
[M-INFO-102807 - Practical Course: Analysis of Complex Data Sets](#)

| Type | Credits | Grading scale | Recurrence | Version |
|----------------------|---------|---------------|------------|---------|
| Completed coursework | 4 | pass/fail | Irregular | 1 |

T

5.219 Course: Practical Course: Data Science [T-INFO-111262]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101256 - Theory and Practice of Data Warehousing and Mining](#)
[M-INFO-105632 - Practical Course: Data Science](#)

| Type | Credits | Grading scale | Recurrence | Version |
|--------------------------------|---------|---------------|------------------|---------|
| Completed coursework (written) | 6 | pass/fail | Each summer term | 1 |


| Exams | | | |
|---------|---------|--|------|
| ST 2021 | 7500307 | Data Science - Laboratory Course | Böhm |

T

5.220 Course: Practical Course: Database Systems [T-INFO-103201]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101256 - Theory and Practice of Data Warehousing and Mining](#)
[M-INFO-101662 - Practical Course: Database Systems](#)

| Type | Credits | Grading scale | Recurrence | Version |
|----------------------|---------|---------------|------------------|---------|
| Completed coursework | 4 | pass/fail | Each winter term | 2 |

| Events | | | | |
|----------|---------|---|-------|---|
| WT 20/21 | 24286 | Datenbankpraktikum | 2 SWS | Practical course /  Böhm |
| Exams | | | | |
| WT 20/21 | 7500130 | Practical Course Database Systems | | Böhm |




Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.221 Course: Practical Course: Geometric Modeling [T-INFO-103207]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101666 - Practical Course: Geometric Modeling](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|--|-------|--|---------------|
| WT 20/21 | 2400024 | Praktikum | | Practical course /  | Xu, Prautzsch |
| ST 2021 | 2400026 | Praktikum Unterteilungsalgorithmen | 2 SWS | Practical course /  | Prautzsch, Xu |
| ST 2021 | 2400107 | Praktikum Geometrisches Modellieren | 2 SWS | Practical course /  | Xu, Prautzsch |
| Exams | | | | | |
| WT 20/21 | 7500268 | Practical course: Geometric Modeling | | | Prautzsch |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.222 Course: Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data [T-INFO-106219]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101256 - Theory and Practice of Data Warehousing and Mining](#)
[M-INFO-103128 - Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data](#)


| Type | Credits | Grading scale | Recurrence | Version |
|----------------------|---------|---------------|------------|---------|
| Completed coursework | 4 | pass/fail | Irregular | 1 |


T

5.223 Course: Practical Course: Smart Data Analytics [T-INFO-106426]

Responsible: Prof. Dr.-Ing. Michael Beigl**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-103235 - Practical Course: Smart Data Analytics](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 6 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|--|-------|--|----------------------------|
| ST 2021 | 24895 | Practical Course: Smart Data Analytics | 4 SWS | Practical course /  | Beigl, Riedel, Zhou, Bulut |
| Exams | | | | | |
| ST 2021 | 7500082 | Practical Course: Smart Data Analytics | | | Beigl, Riedel |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T


5.224 Course: Practical Course: Web Applications and Service-Oriented Architectures (II) [T-INFO-103121]





Responsible: Prof. Dr. Sebastian Abeck

Organisation: KIT Department of Informatics

Part of: [M-INFO-104061 - Microservice-Based Web Applications](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 5 | Grade to a third | Each summer term | 3 |

| Events | | | | |
|---------|---------|--|-------|---|
| ST 2021 | 24873 | Practical Course: Web Applications and Service-Oriented Architectures (II) | 2 SWS | Practical course /  Abeck, Schneider |
| Exams | | | | |
| ST 2021 | 7500139 | Practical Course: Web Applications and Service-Oriented Architectures (II) | | Abeck |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T



5.225 Course: Practical Seminar Digital Service Systems [T-WIWI-106563]





Responsible: Prof. Dr. Alexander Mädche
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 |

| Events | | | | | |
|----------|---------|--|-------|---|--------|
| WT 20/21 | 2540554 | Practical Seminar: Information Systems & Service Design | 3 SWS | Lecture /  | Mädche |
| ST 2021 | 2540554 | Practical Seminar: Information Systems & Service Design (Master) | 3 SWS | Lecture /  | Mädche |
| Exams | | | | | |
| WT 20/21 | 00030 | Practical Seminar Digital Service Systems | | | Mädche |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment consists of a seminar paper, a presentation of the results and the contribution to the discussion (according to §4(2), 3 of the examination regulation). The final grade is based on the evaluation of each component (seminar paper, oral presentation, and active participation).

Prerequisites

None

Recommendation

None

Annotation

New course title starting summer term 2017: "Practical Seminar Digital Service Systems".
The current range of seminar topics is announced on the KSRI website www.ksri.kit.edu.

Below you will find excerpts from events related to this course:

V

Practical Seminar: Information Systems & Service Design

2540554, WS 20/21, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

V

Practical Seminar: Information Systems & Service Design (Master)

2540554, SS 2021, 3 SWS, [Open in study portal](#)

Lecture (V)
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.

Prerequisites

Profound skills in software development are required

Literature

Further literature will be made available in the seminar.

T

5.226 Course: Practical Seminar: Advanced Analytics [T-WIWI-108765]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103118 - Data Science: Data-Driven User Modeling](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each term | 1 |

Competence Certificate

The assessment consists of practical work in the field of advanced analytics, a seminar paper, a presentation of the results and the contribution to the discussion (according to §4(2), 3 of the examination regulation). The final grade is based on the evaluation of each component (seminar paper, oral presentation, and active participation).

Prerequisites

None

Recommendation

At least one module offered by the institute should have been chosen before attending this seminar.

Annotation

The course is held in English. The course is not offered regularly.

T


5.227 Course: Practical Seminar: Data-Driven Information Systems [T-WIWI-106207]





Responsible: Prof. Dr. Alexander Mädche
 Prof. Dr. Gerhard Satzger
 Prof. Dr. Thomas Setzer
 Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-103117 - Data Science: Data-Driven Information Systems

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 4,5 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|--------|
| WT 20/21 | 2540554 | Practical Seminar: Information Systems & Service Design | 3 SWS | Lecture /  | Mädche |
| Exams | | | | | |
| WT 20/21 | 7900363 | Practical Seminar: Information Systems and Service Design | | | Mädche |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment consists of a seminar paper, a presentation of the results and the contribution to the discussion (according to §4(2), 3 of the examination regulation). The final grade is based on the evaluation of each component (seminar paper, oral presentation, and active participation).

Prerequisites

None

Recommendation

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.

Below you will find excerpts from events related to this course:

V

Practical Seminar: Information Systems & Service Design

2540554, WS 20/21, 3 SWS, Language: English, [Open in study portal](#)


Lecture (V)
Online





T

5.228 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 2021 | 2550498 | Practical seminar: Health Care Management | 3 SWS | Practical course /  Nickel, Mitarbeiter |
| Exams | | | | |
| WT 20/21 | 7900105 | Practical Seminar: Health Care Management (with Case Studies) | | Nickel |
| ST 2021 | 7900014 | Practical Seminar: Health Care Management (with Case Studies) | | Nickel |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Due to a research semester of Professor Nickel in WS 19/20, the courses *Location Planning and Strategic SCM* and *Practice Seminar: Health Care Management* do NOT take place in WS 19/20. Please also refer to the information at <https://dol.iior.kit.edu/Lehrveranstaltungen.php> for further details.

The assessment consists in a case study, the writing of a corresponding paper, and an oral exam (according to §4(2), 2 of the examination regulation).

Prerequisites

None.

Recommendation

Basic knowledge as conveyed in the module *Introduction to Operations Research* is assumed.

Annotation

The credits have been reduced to 4,5 starting summer term 2016.

The lecture is offered every term.



The planned lectures and courses for the next three years are announced online.





T

5.229 Course: Practical Seminar: Information Systems and Service Design [T-WIWI-108437]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-102806 - Service Innovation, Design & Engineering](#)
[M-WIWI-104068 - Information Systems in Organizations](#)
[M-WIWI-104080 - Designing Interactive Information Systems](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each term | 2 |

| Events | | | | | |
|----------|---------|--|-------|---|--------|
| WT 20/21 | 2540554 | Practical Seminar: Information Systems & Service Design | 3 SWS | Lecture /  | Mädche |
| ST 2021 | 2540554 | Practical Seminar: Information Systems & Service Design (Master) | 3 SWS | Lecture /  | Mädche |
| Exams | | | | | |
| WT 20/21 | 7900363 | Practical Seminar: Information Systems and Service Design | | | Mädche |
| ST 2021 | 7900262 | Practical Seminar: Information Systems and Service Design / Seminarpraktikum: Information Systems und Service Design | | | Mädche |
| ST 2021 | 7900265 | Interactive Analytics Seminar | | | Mädche |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class. Please take into account that, beside the written documentation, also a practical component (e.g. implementation of a prototype) is part of the course. Please examine the course description for the particular tasks. The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class). In the winter terms, the course is only offered as a seminar.

Prerequisites

None.

Recommendation

Attending the course „Digital Service Design“ is recommended, but not mandatory.

Annotation

The course is held in English.

Below you will find excerpts from events related to this course:

V

Practical Seminar: Information Systems & Service Design

2540554, WS 20/21, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

V

Practical Seminar: Information Systems & Service Design (Master)

2540554, SS 2021, 3 SWS, [Open in study portal](#)

Lecture (V)
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.

Prerequisites

Profound skills in software development are required

Literature

Further literature will be made available in the seminar.

T

5.230 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 | | | | |
|----------|---------|---|--------|--|
| WT 20/21 | 7900363 | Practical Seminar: Information Systems and Service Design | Mädche | |

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class.

Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class).

Prerequisites

None

Recommendation

Knowledge of Service Innovation Methods is assumed. Therefore it is recommended to attend the course Service Innovation [2540468] beforehand.

Annotation

Due to the project work, the number of participants is limited and participation requires knowledge about models, concepts and approaches that are taught in the Service Innovation lecture. Having taken the Service Innovation lecture or demonstrating equivalent knowledge is a prerequisite for participating in this Practical Seminar. Details for registration will be announced on the web pages for this course.

The seminar is not offered regularly.

T

5.231 Course: Predictive Mechanism and Market Design [T-WIWI-102862]

Responsible: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101453 - Applied Strategic Decisions](#)
[M-WIWI-101505 - Experimental Economics](#)

| Type | Credits | 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.

T

5.232 Course: Predictive Modeling [T-WIWI-110868]

Responsible: Jun.-Prof. Dr. Fabian Krüger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101638 - Econometrics and Statistics I](#)
[M-WIWI-101639 - Econometrics and Statistics II](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|--|-------|------------|----------------|
| ST 2021 | 2521311 | Predictive Modeling | 2 SWS | Lecture / | Krüger |
| ST 2021 | 2521312 | Predictive Modeling (Tutorial) | 2 SWS | Practice / | Krüger, Koster |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

Open Book exam, online

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Predictive Modeling

2521311, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

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.

V

Predictive Modeling (Tutorial)

2521312, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Practice (Ü)
Online

**5.233 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 2021 | 2540529 | Price Management | 2 SWS | Lecture / | Glenn |
| ST 2021 | 2540530 | Exercise Price Management | 1 SWS | Practice / | Glenn |
| Exams | | | | | |
| WT 20/21 | 7900170 | Price Management (Nachklausur SS 2020) | 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:

**Price Management**

2540529, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

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

5.234 Course: Price Negotiation and Sales Presentations [T-WIWI-102891]

Responsible: Prof. Dr. Martin Klarmann
Mark Schröder

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-105312 - Marketing and Sales Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 1,5 | Grade to a third | Each winter term | 3 |

Competence Certificate

This alternative exam assessment consists of a presentation with a subsequent discussion totalling 25 minutes. Moreover learning contents are checked by realistic 30-minute price negotiations.

Prerequisites

None

Recommendation

None

Annotation

Please note that the workshop "Price Negotiation and Sales Presentations" as well as all other 1.5-ECTS courses will not take place in the winter term 20/21 due to a research semester. The course will probably be offered again starting in WS21/22.

Participation requires an application. The application period starts at the beginning of the semester. More information can be obtained on the website of the research group Marketing & Sales (marketing.iism.kit.edu). Access to this course is restricted. Typically all students will be granted the attendance of one course with 1.5 ECTS. Nevertheless attendance can not be guaranteed. For further information please contact Marketing and Sales Research Group (marketing.iism.kit.edu). Please note that only one of the courses from the election block can be attended in the module.

T


5.235 Course: Pricing Excellence [T-WIWI-111246]

Responsible: Fabian Bill
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 | 1,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|------------------------------------|-------|--|------|
| ST 2021 | 2571175 | Pricing Excellence | 1 SWS | Others (sons /  | Bill |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Alternative exam assessment (team presentation of a case study with a duration of about 25 minutes and a subsequent discussion).

Prerequisites

None.

Annotation

Please note that only one of the courses in the module's supplementary offering can be counted. This event has a restriction on participation. The Marketing and Sales Research Group typically allows all students to attend a 1.5 credit course in the corresponding module. A guarantee for the attendance of a certain event cannot be given. An application is required for participation in this event. 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) shortly before the start of the lecture period in the summer semester.

Below you will find excerpts from events related to this course:

V

Pricing Excellence

2571175, SS 2021, 1 SWS, Language: English, [Open in study portal](#)

Others (sonst.)
Online

Content

In a theoretical part at the beginning of the course, students are taught the theoretical foundations of pricing. This includes an introduction to (1) price setting of product prices as well as (2) price setting of customer net prices (development of discount systems). Furthermore, theoretical foundations of price implementation and price monitoring are discussed.

Theoretical contents are applied and presented by teams within a case study format.

The learning objectives are as follows:

- Getting to know the theoretical foundations of price setting
- Getting to know the theoretical foundations of price execution and price monitoring
- Application of the acquired knowledge in a case study format
- Concise and structured presentation of the results

Alternative exam assessment according to § 4 paragraph 2 Nr. 3 of the examination regulation (presentation of a case study with subsequent discussion).

Total time required for 1.5 credit points: approx. 45.0 hours

Attendance time: 15 hours

Preparation and wrap-up of the course: 22.5 hours

Exam and exam preparation: 7.5 hours

Organizational issues


Blockveranstaltung, Raum 115, Geb. 20.21, Termine werden noch bekannt gegeben





T

5.236 Course: Product and Innovation Management [T-WIWI-109864]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101510 - Cross-Functional Management Accounting](#)
[M-WIWI-101514 - Innovation Economics](#)
[M-WIWI-105312 - Marketing and Sales Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 3 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---------|---------|---|-------|---|----------|
| ST 2021 | 2571154 | Product and Innovation Management | 2 SWS | Lecture /  | Klarmann |
| Exams | | | | | |
| ST 2021 | 7900024 | Product and Innovation Management | | | Klarmann |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment is carried out (according to §4(2), 3 SPO) in the form of a written open book exam. In the summer term 2021, the written open book exam will either take place in the lecture hall or online, depending on further pandemic developments.

Further details on the open book exam will be announced in the lecture.

Prerequisites

None

Annotation

For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

Below you will find excerpts from events related to this course:

V

Product and Innovation Management

2571154, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

This course addresses topics around the management of new as well as existing products. After the foundations of product management, especially the product choice behavior of customers, students get to know in detail different steps of the innovation process. Another section regards the management of the existing product portfolio.

Students

- know the most important terms of the product and innovation concept
- understand the models of product choice behavior (e.g., the Markov model, the Luce model)
- are familiar with the basics of network theory (e.g. the Triadic Closure concept)
- know the central strategic concepts of innovation management (especially the market driving approach, pioneer and successor, Miles/Snow typology, blockbuster strategy)
- master the most important methods and sources of idea generation (e.g. open innovation, lead user method, crowdsourcing, creativity techniques, voice of the customer, innovation games, conjoint analysis, quality function deployment, online toolkits)
- are capable of defining and evaluating new product concepts and know the associated instruments like focus groups, product testing, speculative sales, test market simulation Assessor, electronic micro test market
- have advanced knowledge about market introduction (e.g. adoption and diffusion models Bass, Fourt/Woodlock, Mansfield)
- understand important connections of the innovation process (cluster formation, innovation culture, teams, stage-gate process)

The assessment is carried out (according to §4(2), 3 SPO) in the form of a written open book exam.

Total effort for 3 credit points: approx. 90 hours

Presence time: 30 hours

Preparation and wrap-up of LV: 45.0 hours

Exam and exam preparation: 15.0 hours

For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

Literature

Homburg, Christian (2016), Marketingmanagement, 6. Aufl., Wiesbaden.

T



5.237 Course: Production and Logistics Management [T-WIWI-102632]





Responsible: Dr.-Ing. Simon Glöser-Chahoud
Prof. Dr. Frank Schultmann

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101412 - Industrial Production III](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 5,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|--|-------|--|----------------------------|
| ST 2021 | 2581954 | Production and Logistics Management | 2 SWS | Lecture /  | Schultmann, Glöser-Chahoud |
| ST 2021 | 2581955 | Übung zu Produktions- und Logistikmanagement | 2 SWS | Practice /  | Zimmer, Huster |
| Exams | | | | | |
| WT 20/21 | 7981954 | Production and Logistics Management | | | 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 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

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.

**5.238 Course: Project Lab Cognitive Automobiles and Robots [T-WIWI-109985]**

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103356 - Machine Learning](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|----------|---------|--|-------|--------------------|---------|
| WT 20/21 | 2512501 | Practical Course Cognitive Automobiles and Robots (Master) | 3 SWS | Practical course / | Zöllner |
| ST 2021 | 2513500 | Cognitive Automobiles and Robots | 2 SWS | Seminar / | Zöllner |
| Exams | | | | | |
| WT 20/21 | 7900107 | Advanced Lab Cognitive Automobile and Robots (Master) | | | 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:

**Practical Course Cognitive Automobiles and Robots (Master)**

2512501, WS 20/21, 3 SWS, Language: German/English, [Open in study portal](#)

**Practical course (P)
Online**

Content

The lab is intended as a practical supplement to lectures such as "Machine Learning". The theoretical basics are applied in the lab course. The aim of the lab course is that the participants work together to design, develop and evaluate a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

In addition to the scientific objectives involved in the investigation and application of the methods, aspects of project-specific teamwork in research (from specification to presentation of the results) are also developed in this practical course.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and implementation and evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can practically apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles.
- Students master the analysis and solution of corresponding problems in a team.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning, C/C++ knowledge, Python knowledge

Workload:

The workload of 4.5 credit points consists of the time spent in the lab for practical implementation of the selected solution, as well as the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

**Cognitive Automobiles and Robots**

2513500, SS 2021, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Content

The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.


Registration and further information can be found in the WiWi-portal.





T

5.239 Course: Project Lab Machine Learning [T-WIWI-109983]

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103356 - Machine Learning](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---------|---------|--|-------|--|---------|
| ST 2021 | 2512500 | Project Lab Machine Learning | 3 SWS | Practical course /  | Zöllner |
| Exams | | | | | |
| ST 2021 | 7900086 | Project Lab Machine Learning | | | 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 2021, 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 4.5 credit points consists of the time spent in the lab for practical implementation of the selected solution, as well as the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.



Registration and further information can be found in the WiWi-portal.





T

5.240 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 20/21 | 2581963 | Project Management | 2 SWS | Lecture /  | Schultmann, Volk, Wiens, Schumacher, Rosenberg, Wehrle |
| WT 20/21 | 2581964 | Übung zu Project Management | 1 SWS | Practice /  | Volk, Wiens, Schumacher, Rosenberg, Wehrle, Gehring |
| Exams | | | | | |
| WT 20/21 | 7981963 | Project Management | | | 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 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

1. Introduction
2. Principles of Project Management
3. Project Scope Management
4. Time Management and Resource Scheduling
5. Cost Management
6. Quality Management
7. Risk Management
8. Stakeholder
9. Communication, Negotiation and Leadership
10. Project Controlling
11. Agile Project Management

Literature

Wird in der Veranstaltung bekannt gegeben.

T

5.241 Course: Project Management in Practice [T-INFO-101976]

Responsible: Prof. Dr.-Ing. Klemens Böhm

Organisation: KIT Department of Informatics

Part of: [M-INFO-101208 - Innovative Concepts of Data and Information Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|----------------------|---------|---------------|------------|---------|
| Completed coursework | 1,5 | pass/fail | Irregular | 1 |

| Events | | | | | |
|---------|---------|--|-------|-----------|----------------|
| ST 2021 | 2400019 | Project Management in Practice | 2 SWS | Lecture / | Böhm, Schnober |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Below you will find excerpts from events related to this course:

V

Project Management in Practice

2400019, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

At the end of the course, the participants:

- Know the principles of project management and are able to make use of them in real-world case studies.
- Have profound knowledge about project phases, principles of project planning, fundamental elements such as project charter & scope definitions, descriptions of project goals, activity planning, milestones, project-structure plans, agenda and cost planning and risk management. Further, they know principle elements of project implementation, crisis management, escalation and, last but not least, project-termination activities.
- Understand and are able to adopt the fundamentals of planning as well as the subjective factors which are relevant in a project. This includes topics such as communication, group processes, teambuilding, leadership, creative solution methods and risk-assessment methods.

The following key skills are taught:

- Project planning
- Project control
- Communication
- Leadership behavior
- Crisis management
- Identification of and solutions of difficult situations
- Team building
- Motivation (of oneself and of others)

Organizational issues

Die Plätze sind begrenzt und die Anmeldung findet durch das Sekretariat Prof. Böhm statt.

Termine

FR, 16. 4. von 13:00 bis 18:00 Uhr

SA, 17.4. von 9:00 bis 15:30 Uhr

FR, 23.4. von 13:00 bis 18:00 Uhr

SA, 24.4. von 9:00 bis 15:30 Uhr

T

5.242 Course: Provable Security in Cryptography [T-INFO-101259]

Responsible: Prof. Dr. Dennis Hofheinz
Organisation: KIT Department of Informatics
Part of: [M-INFO-101198 - Advanced Topics in Cryptography](#)


| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 3 | Grade to a third | Each winter term | 1 |

T

5.243 Course: Psychological Processes in Individual Decisions [T-WIWI-111315]

Responsible: Prof. Dr. Benjamin Scheibehenne
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 | Once | 1 |

| Events | | | | | |
|---------|---------|---|-------|--|-----------------------|
| ST 2021 | 2500003 | Psychological processes in individual decisions | 2 SWS | Others (sons / ) | Seidler, Scheibehenne |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The examination takes place in the form of an alternative exam assessment: The students develop their own research idea and an experimental design accompanying the seminar. This idea will be presented at the end and explained in a written paper.

30% assessment: presentation

70% assessment: written work

Prerequisites

None

Recommendation

None

Annotation

The course will be offered once in the summer semester 2021.

T

5.244 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 20/21 | 2561127 | Public Management | 3 SWS | Lecture / Practice (/) | Wigger |
| Exams | | | | | |
| WT 20/21 | 790puma | Public Management | | | Wigger |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

Depending on the further pandemic development in the summer semester 2021 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 20/21, 3 SWS, Language: German, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

Organizational issues

Dienstag 14:00-15:30 Uhr per Zoom-Livestream

Literature**Weiterführende Literatur:**


- Damkowski, W. und C. Precht (1995): Public Management; Kohlhammer
- Richter, R. und E.G. Furubotn (2003): Neue Institutionenökonomik; 3. Auflage, Mohr
- Schedler, K. und I. Proeller (2003): New Public Management; 2. Auflage; UTB
- Mueller, D.C. (2009): Public Choice III; Cambridge University Press
- Wigger, B.U. (2006): Grundzüge der Finanzwissenschaft; 2. Auflage; Springer

T

5.245 Course: Public Media Law [T-INFO-101311]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [M-INFO-101217 - Public Business Law](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|----------------------------------|-------|---|---------------------------|
| WT 20/21 | 24082 | Public Media Law | 2 SWS | Lecture /  | Eichenhofer |
| Exams | | | | | |
| WT 20/21 | 7500062 | Public Media Law | | | Dreier, Eichenhofer, Matz |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.246 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 2021 | 2560120 | Public Revenues | 2 SWS | Lecture / 📱 | Wigger |
| ST 2021 | 2560121 | Übung zu Öffentliche Einnahmen | 1 SWS | Practice / 📱 | Wigger |
| Exams | | | | | |
| WT 20/21 | 790oeff | Public Revenues | | | Wigger |

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

Competence Certificate

Depending on the further pandemic development in the summer semester 2021 the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

Prerequisites

None

Recommendation

Basic knowledge of Public Finance is required.

Below you will find excerpts from events related to this course:

V

Public Revenues

2560120, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

The *Public Revenues* lecture is concerned with the theory and policy of taxation and public dept. In the first chapter, fundamental concepts of taxation theory are introduced, whereas the second chapter deals with key elements of the German taxation system. The allocative and distributive effects of different taxation types are examined in chapter three and four. Chapter five integrates both allocative and distributive components in order to derive a theory of optimal taxation. The core of the sixth chapter is represented by international aspects of taxation. The debt part begins with a description of the extent and structure of public dept in chapter seven. In the following chapter, macroeconomic theories of national dept are evolved, while chapter nine is concerned with its long term consequences when employed as a regular instrument of budgeting. Finally, the tenth chapter deals with constitutional limits to public debt-incurring.

Learning goals:

See German version.

Workload:

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

Literatur:

- Homburg, S.(2000): *Allgemeine Steuerlehre*, Vahlen
- Rosen, H.S.(1995): *Public Finance*; 4. Aufl., Irwin
- Wellisch, D.(2000): *Finanzwissenschaft I und Finanzwissenschaft III*, Vahlen
- Wigger, B. U.(2006): *Grundzüge der Finanzwissenschaft*; 2. Aufl., Springer

T

5.247 Course: Python for Computational Risk and Asset Management [T-WIWI-110213]

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-105032 - Data Science for Finance](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|----------|---------|--|-------|-----------|--------|
| WT 20/21 | 2500016 | Python for Computational Risk and Asset Management | 2 SWS | Lecture / | Ulrich |
| Exams | | | | | |
| WT 20/21 | 7900232 | Python for Computational Risk and Asset Management | | | Ulrich |
| WT 20/21 | 7900304 | Python for Computational Risk and Asset Management | | | Ulrich |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

The examination takes the form of an alternative exam assessment.

The alternative exam assessment consists of a Python-based "Takehome Exam". At the end of the third week of January, the student is given a "Takehome Exam" which he processes and sends back independently within 4 hours using Python. Precise instructions will be announced at the beginning of the course. The alternative exam assessment can be repeated a maximum of once. A timely repeat option takes place at the end of the third week in March of the same year. More detailed instructions will be given at the beginning of the course.

Prerequisites

None.

Recommendation

Good knowledge of statistics and basic programming skills

Below you will find excerpts from events related to this course:

V

Python for Computational Risk and Asset Management

2500016, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

The course covers several Python topics, among them:



- Automatic finance data extraction from the web
- Analyzing finance data
- Pattern recognition across asset markets
- Quant portfolio strategies to exploit patterns
- Modeling return densities using time-series and option methods
- Comparing strength and weakness of machine learning tools such as neural networks to financial econometric- and option-implied methods





T

5.248 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 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|----------|---------|---|----------|--|--------------------------|
| WT 20/21 | 2581007 | Quantitative Methods in Energy Economics | 2 SWS | Lecture /  | Plötz, Dengiz, Yilmaz |
| WT 20/21 | 2581008 | Übung zu Quantitative Methods in Energy Economics | 1 SWS | Practice /  | Dengiz, Yilmaz, Fichtner |
| Exams | | | | | |
| WT 20/21 | 7981007 | Quantitative Methods in Energy Economics | Fichtner | | |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment consists of an oral (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. 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

Quantitative Methods in Energy Economics

2581007, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

Energy economics makes use of many quantitative methods in exploration and analysis of data as well as in simulations and modelling. This lecture course aims at introducing students of energy economics into the application of quantitative methods and techniques as taught in elementary courses to real problems in energy economics. The focus is mainly on regression, simulation, time series analysis and related statistical methods as applied in energy economics.

Learning Goals:

The student

- knows and understands selected quantitative methods of energy economics
- is able to use selected quantitative methods of energy economics
- understands they range of usage, limits and is autonomously able to adress new problems by them.

Literature


Wird in der Vorlesung bekannt gegeben.





T

5.249 Course: Randomized Algorithms [T-INFO-101331]

Responsible: Thomas Worsch**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100794 - Randomized Algorithms](#)[M-INFO-101199 - Advanced Algorithms: Design and Analysis](#)[M-INFO-101200 - Advanced Algorithms: Engineering and Applications](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|----------|---------------------------------------|-------|---|--------|
| WT 20/21 | 24171 | Randomized Algorithms | 3 SWS | Lecture / Practice (/ ) | Worsch |
| Exams | | | | | |
| WT 20/21 | 75400002 | Randomized Algorithms | | | Worsch |



Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled





T

5.250 Course: Recommender Systems [T-WIWI-102847]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101410 - Business & Service Engineering](#)
[M-WIWI-101470 - Data Science: Advanced CRM](#)
[M-WIWI-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 2021 | 2540506 | Recommender Systems | 2 SWS | Lecture /  | Geyer-Schulz |
| ST 2021 | 2540507 | Exercise Recommender Systems | 1 SWS | Practice /  | Nazemi |
| Exams | | | | | |
| WT 20/21 | 7900149 | Recommender Systems | | | 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, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

At first, an overview of general aspects and concepts of recommender systems and its relevance for service providers and customers is given. Next, different categories of recommender systems are discussed. This includes explicit recommendations like customer reviews as well as implicit services based on behavioral data. Furthermore, the course gives a detailed view of the current research on recommender systems at the Chair of Information Services and Electronic Markets.

Learning objectives:

The student

- is proficient in different statistical, data-mining, and game theory methods of computing implicit and explicit recommendations
- evaluates recommender systems and compares these with related services

Workload:

The total workload for this course is approximately 135 hours (4.5 credits):

Time of attendance

- Attending the lecture: 15 x 90min = 22h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m
- Examination: 1h 00m

Self-study

- Preparation and wrap-up of the lecture: 15 x 180min = 45h 00m
- Preparing the exercises: 25h 00m
- Preparation of the examination: 31h 00m

Sum: 135h 00m

Exam:

Assessment consists of a written exam of 1 hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation.

The course is considered successfully taken, if at least 50 out of 100 points are acquired in the written exam. In this case, all additional points (up to 10) from exercise work will be added.

Grade: Minimum points

- 1,0: 95
- 1,3: 90
- 1,7: 85
- 2,0: 80
- 2,3: 75
- 2,7: 70
- 3,0: 65
- 3,3: 60
- 3,7: 55
- 4,0: 50
- 5,0: 0

Literature

Rakesh Agrawal, Tomasz Imielinski, and Arun Swami. Mining association rules between sets of items in large databases. In Sushil Jajodia Peter Buneman, editor, Proceedings of the ACM SIGMOD International Conference on Management of Data, volume 22, Washington, D.C., USA, Jun 1993. ACM, ACM Press.

Rakesh Agrawal and Ramakrishnan Srikant. Fast algorithms for mining association rules. In Proceedings of the 20th Very Large Databases Conference, Santiago, Chile, pages 487 – 499, Sep 1994.

Asim Ansari, Skander Essegaier, and Rajeev Kohli. Internet recommendation systems. *Journal of Marketing Research*, 37:363 – 375, Aug 2000.

Christopher Avery, Paul Resnick, and Richard Zweckhauser. The market for evaluations. *American Economic Review*, 89(3):564 – 584, 1999.

Ibrahim Cingil, Asuman Dogac, and Ayca Azgin. A Broader Approach to Personalization. *Communications of the ACM*, 43(8):136 – 141, Aug 2000.

Richard O. Duda, Peter E. Hart, and David G. Stork. *Pattern Classification*. Wiley-Interscience, New York, 2 edition, 2001.

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. A customer purchase incidence model applied to recommender services. In R. Kohavi et al., editor, Proceedings of the WebKDD 2001 – Mining log data across all customer touchpoints, volume 2356 of Lecture Notes in Artificial Intelligence LNAI, pages 25–47, Berlin, 2002. ACM, Springer-Verlag.

Jon M. Kleinberg. Authoritative sources in a hyperlinked environment. *JACM*, 46(5):604–632, sep 1999.

Joseph Konstan, Bradley Miller, David Maltz, Jonathan Herlocker, Lee Gordon, and John Riedl. Grouplens: Applying Collaborative Filtering to Usenet News. *Communications of the ACM*, 40(3):77 – 87, Mar 1997.

Paul Resnick, Neophytos Iacovou, Peter Bergstrom, and John Riedl. Grouplens: An open architecture for collaborative filtering of netnews. In Proceedings of the conference on Computer supported cooperative work, pages 175 – 186. ACM Press, 1994.

Weiterführende Literatur:

Antoinette Alexander. The return of hardware: A necessary evil? *Accounting Technology*, 15(8):46 – 49, Sep 1999.

Christopher Avery and Richard Zeckhauser. Recommender systems for evaluating computer messages. *Communications of the ACM*, 40(3):88 – 89, Mar 1997.

Steven Bellman, Gerald Lohse, and Eric Johnson. Predictors of Online Buying Behavior. *Communications of the ACM*, 42(12):32 – 38, Dec 1999.

Thomas J. Blischok. Every transaction tells a story. *Chain Store Age Executive with Shopping Center Age*, 71(3):50–56, Mar 1995.

Hans Hermann Bock. *Automatische Klassifikation*. Vandenhoeck und Ruprecht, Göttingen, 1974.

Andrew S.C. Ehrenberg. *Repeat-Buying: Facts, Theory and Applications*. Charles Griffin & Company Ltd, London, 2 edition, 1988.

Wolfgang Gaul, Andreas Geyer-Schulz, Michael Hahsler, and Lars Schmidt-Thieme. eMarketing mittels Recommendersystemen. *Marketing ZFP*, 24:47 – 55, 2002.

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. myvu: a next generation recommender system based on observed consumer behavior and interactive evolutionary algorithms. In W. Gaul, O. Opitz, and M. Schader, editors, *Data Analysis – Scientific Modeling and Practical Applications*, volume 18 of Studies in Classification, Data Analysis and Knowledge Organization, pages 447 – 457, Heidelberg, Germany, 2000. Springer.

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. Educational and scientific recommender systems: Designing the information channels of the virtual university. *International Journal of Engineering Education*, 17(2):153 – 163, 2001.

Mark-Edward Grey. *Recommendersysteme auf Basis linearer Regression*, 2004.

John A. Hartigan. *Clustering Algorithms*. John Wiley and Sons, New York, 1975.

Kevin Kelly. *New Rules for the New Economy: 10 Radical Strategies for a Connected World*. Viking, 1998.

Taek-Hun Kim, Young-Suk Ryu, Seok-In Park, and Sung-Bong Yang. An improved recommendation algorithm in collaborative filtering. In K. Bauknecht, A. Min Tjoa, and G. Quirchmayr, editors, *E-Commerce and Web Technologies, Third International Conference, Aix-en-Provence, France*, volume 2455 of Lecture Notes in Computer Science, pages 254–261, Berlin, Sep 2002. Springer-Verlag.

Ron Kohavi, Brij Masand, Myra Spiliopoulou, and Jaideep Srivastava. Web mining. *Data Mining and Knowledge Discovery*, 6:5 – 8, 2002.

G. S. Maddala. *Introduction to Econometrics*. John Wiley, Chichester, 3 edition, 2001.

Andreas Mild and Martin Natter. Collaborative filtering or regression models for Internet recommendation systems? *Journal of Targeting, Measurement and Analysis for Marketing*, 10(4):304 – 313, Jan 2002.

Andreas Mild and Thomas Reutterer. An improved collaborative filtering approach for predicting cross-category purchases based on binary market basket data. *Journal of Retailing & Consumer Services*, 10(3):123–133, may 2003.

Paul Resnick and Hal R. Varian. Recommender Systems. *Communications of the ACM*, 40(3):56 – 58, Mar 1997.

Badrul M. Sarwar, Joseph A. Konstan, Al Borchers, Jon Herlocker, Brad Miller, and John Riedl. Using filtering agents to improve prediction quality in the grouplens research collaborative filtering system. In Proceedings of ACM Conference on Computer-Supported Cooperative Work, Social Filtering, Social Influences, pages 345 – 354, New York, 1998. ACM Press.

J. Ben Schafer, Joseph Konstan, and Jon Riedl. Recommender Systems in E-commerce. In Proceedings of the 1st ACM conference on Electronic commerce, pages 158 – 166, Denver, Colorado, USA, Nov 1999. ACM.

Upendra Shardanand and Patti Maes. Social information filtering: Algorithms for automating "word of mouth". In Proceedings of ACM SIGCHI, volume 1 of Papers: Using the Information of Others, pages 210 – 217. ACM, 1995.

T

5.251 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.

T

5.252 Course: Requirements Engineering [T-INFO-101300]

Responsible: Prof. Dr.-Ing. Anne Kozirolek
Organisation: KIT Department of Informatics
Part of: [M-INFO-101201 - Software Systems](#)
[M-INFO-101202 - Software Methods](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---------|---------|---|-------|-----------|------------------|
| ST 2021 | 2400050 | Requirements Engineering | 2 SWS | Lecture / | Kozirolek, Werle |
| Exams | | | | | |
| ST 2021 | 7500059 | Requirements Engineering | | | Kozirolek |
| ST 2021 | 7500295 | Requirements Engineering Second Exam VL 2400050 | | | Kozirolek |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Recommendation

Das Modul Softwaretechnik II wird empfohlen.

Below you will find excerpts from events related to this course:

V

Requirements Engineering

2400050, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

Information for summer term 2021: The lecture will not be held in the summer term 2021. You can still register for the course, prepare the material by watching the recordings of last years' lectures, and take the exam.

Having a good requirements specification is a critical prerequisite for any successful software project. This lecture gives an introduction to processes, methods and representation forms for specifying and managing requirements.

The topics include background and general overview, processes and methods for requirements elicitation, specification with natural language, object-oriented specification, use cases, UML, specification of quality requirements and constraints, as well as requirements validation and management.

General remarks: The lecture is held in English and all lecture material is in English. The lecture has been recorded and the recordings will be made available on the Ilias platform.

Literature

The lecture is based on slides and works by Martin Glinz, which is why there is no book that accompanies the lecture. Students are welcome to discuss differences between the lecture and the content of the course in class.

Main suggestion: Pohl, K. (2010). Requirements Engineering: Fundamentals, Principles, and Techniques. Springer Verlag. (will be available in library)

Further reading:

- I. Alexander, R. Stevens (2002). Writing Better Requirements. London: Addison-Wesley.
- A. Davis (2005). Just Enough Requirements Management. New York: Dorset House.
- D.C. Gause, G.M. Weinberg (1989). Exploring Requirements: Quality before Design. New York: Dorset House.
- M. Glinz (2013). A Glossary of Requirements Engineering Terminology, Version 1.5. International Requirements Engineering Board (IREB). Originally published in 2011. Available at <http://www.ireb.org> (check-out CPRE Glossary)
- E. Gottesdiener (2002). Requirements by Collaboration: Workshops for Defining Needs. Boston: Addison-Wesley.
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T



5.253 Course: Risk Management in Industrial Supply Networks [T-WIWI-102826]





Responsible: Prof. Dr. Frank Schultmann
Dr. Marcus Wiens

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101412 - Industrial Production III](#)
[M-WIWI-101471 - Industrial Production II](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|--|------------|--|-------------------|
| WT 20/21 | 2581992 | Risk Management in Industrial Supply Networks | 2 SWS | Lecture /  | Wiens, Schultmann |
| WT 20/21 | 2581993 | Übung zu Risk Management in Industrial Supply Networks | 1 SWS | Practice /  | Klein, Wiens |
| Exams | | | | | |
| WT 20/21 | 7981992 | Risk Management in Industrial Supply Networks | 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 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

Students learn methods and tools to manage risks in complex and dynamically evolving supply chain networks. Students learn the key terms and concepts of risk management and decision theory, in particular expected utility theory. Based on the theoretic prerequisites, students are able to determine and analyze risk diversification, risk pooling, insurance mechanisms and get an overview on statistical risk measures and real options. These approaches are adapted to analyze supply chain risks in a network context. In this manner, students gain knowledge in basic notions of network theory, network metrics and network-strategies for supply chain decisions.

- Introduction
- Risks in decisions under uncertainty: Expected Utility Theory & risk preferences
- The newsvendor model; multivariate risks and insurance
- Risk measures & evaluation techniques: Value-at-Risk, Conditional Value at Risk, Monte Carlo and Real Options
- Transparency in complex supply chains
- Network risk: network basics and criticality
- Risk in supply networks: empirical approaches and insights

Literature

Wird in der Veranstaltung bekannt gegeben.

T

5.254 Course: Roadmapping [T-WIWI-102853]

Responsible: Dr. Daniel Jeffrey Koch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)
[M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|-----------------------------|-------|-----------|------|
| ST 2021 | 2545102 | Roadmapping | 2 SWS | Seminar / | Koch |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO).

Prerequisites

None

Recommendation

Prior attendance of the course Innovation Management is recommended.

Annotation

See German version.

Below you will find excerpts from events related to this course:

V

Roadmapping

2545102, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)
Online**

Content


Technology Assessment can play a role at different points in the innovation process and can be considered as decision support for or against certain technological options. The seminar Technology Assessment will focus on the early phase "fuzzy front end" in innovation management. The technology assessment will take place here under a high degree of uncertainty regarding future technological developments. The evaluation of technologies can be done with methods such as Technology Readiness, Technology Lifecycle Analysis, Portfolio Analysis, etc.. The early evaluation of technologies is particularly important against the background of limited resources in companies and uncertainty about future developments.



T

5.255 Course: Robotics I - Introduction to Robotics [T-INFO-108014]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: [M-INFO-100893 - Robotics I - Introduction to Robotics](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 6 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---|---------|---|--------|
| WT 20/21 | 2424152 | Robotics I - Introduction to Robotics | 3/1 SWS | Lecture /  | Asfour |
| Exams | | | | | |
| WT 20/21 | 7500106 | Robotics I - Introduction to Robotics | | | Asfour |
| ST 2021 | 7500218 | Robotik I - Einführung in die Robotik | | | Asfour |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T 5.256 Course: Robotics II: Humanoid Robotics [T-INFO-105723]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: [M-INFO-101251 - Autonomous Robotics](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each summer term | 4 |

| Events | | | | | |
|----------|---------|--|-------|-------------|--------|
| ST 2021 | 2400074 | Robotics II: Humanoid Robotics | 2 SWS | Lecture / 📱 | Asfour |
| Exams | | | | | |
| WT 20/21 | 7500211 | Robotics II: Humanoid Robotics | | | Asfour |
| ST 2021 | 7500086 | Robotics II: Humanoid Robotics | | | Asfour |

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

Below you will find excerpts from events related to this course:

V

Robotics II: Humanoid Robotics
 2400074, SS 2021, 2 SWS, Language: German/English, [Open in study portal](#)

**Lecture (V)
Online**

Content

The lecture presents current work in the field of humanoid robotics that deals with the implementation of complex sensorimotor and cognitive abilities. In the individual topics different methods and algorithms, their advantages and disadvantages, as well as the current state of research are discussed.

The topics addressed are: biomechanical models of the human body, biologically inspired and data-driven methods of grasping, active perception, imitation learning and programming by demonstration as well as semantic representations of sensorimotor experience

Learning Objectives:

The students have an overview of current research topics in autonomous learning robot systems using the example of humanoid robotics. They are able to classify and evaluate current developments in the field of cognitive humanoid robotics.

The students know the essential problems of humanoid robotics and are able to develop solutions on the basis of existing research.

Organizational issues

Die Erfolgskontrolle erfolgt in Form einer schriftlichen Prüfung im Umfang von i.d.R. 60 Minuten nach § 4 Abs. 2 Nr. 1 SPO.

Arbeitsaufwand: 90 h

Voraussetzungen: Der Besuch der Vorlesungen *Robotik I – Einführung in die Robotik* und *Mechano-Informatik in der Robotik* wird vorausgesetzt

Zielgruppe: **Modul für Master Maschinenbau, Mechatronik und Informationstechnik, Elektrotechnik und Informationstechnik**

Literature

Weiterführende Literatur

Wissenschaftliche Veröffentlichungen zum Thema, werden auf der VL-Website bereitgestellt.

T

5.257 Course: Robotics III - Sensors and Perception in Robotics [T-INFO-109931]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: [M-INFO-101251 - Autonomous Robotics](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|----------|---------|---|-------|-----------|--------|
| ST 2021 | 2400067 | Robotics III - Sensors and Perception in Robotics | 2 SWS | Lecture / | Asfour |
| Exams | | | | | |
| WT 20/21 | 7500207 | Robotics III - Sensors and Perception in Robotics | | | Asfour |
| ST 2021 | 7500242 | Robotics III - Sensors and Perception in Robotics | | | Asfour |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Below you will find excerpts from events related to this course:

V

Robotics III - Sensors and Perception in Robotics

2400067, SS 2021, 2 SWS, Language: German/English, [Open in study portal](#)

Lecture (V)
Online

Content

The lecture supplements the lecture Robotics I with a broad overview of sensors used in robotics. The lecture focuses on visual perception, object recognition, simultaneous localization and mapping (SLAM) and semantic scene interpretation. The lecture is divided into two parts:

In the first part a comprehensive overview of current sensor technologies is given. A basic distinction is made between sensors for the perception of the environment (exteroceptive) and sensors for the perception of the internal state (proprioceptive).

The second part of the lecture concentrates on the use of exteroceptive sensors in robotics. The topics covered include tactile exploration and visual data processing, including advanced topics such as feature extraction, object localization, simultaneous localization and mapping (SLAM) and semantic scene interpretation.

Learning Objectives:

Students know the main sensor principles used in robotics and understand the data flow from physical measurement through digitization to the use of the recorded data for feature extraction, state estimation and environmental modeling.

Students are able to propose and justify suitable sensor concepts for common tasks in robotics.

Organizational issues

Die Erfolgskontrolle erfolgt in Form einer schriftlichen Prüfung im Umfang von i.d.R. 60 Minuten nach § 4 Abs. 2 Nr. 1 SPO.

Modul für Master Maschinenbau, Mechatronik und Informationstechnik, Elektrotechnik und Informationstechnik

Voraussetzungen: **Der Besuch der Vorlesung Robotik I – Einführung in die Robotik wird vorausgesetzt**

Zielgruppe: Die Vorlesung richtet sich an Studierende der Informatik, der Elektrotechnik und des Maschinenbaus sowie an alle Interessenten an der Robotik.

Arbeitsaufwand: 90 h

Literature

Eine Foliensammlung wird im Laufe der Vorlesung angeboten.

Begleitende Literatur wird zu den einzelnen Themen in der Vorlesung bekannt gegeben.

T


5.258 Course: Security [T-INFO-101371]

Responsible: Prof. Dr. Dennis Hofheinz
Prof. Dr. Jörn Müller-Quade

Organisation: KIT Department of Informatics

Part of: M-INFO-101207 - Networking Security - Theory and Praxis

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 6 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|----------|-------|---|----------------------|
| ST 2021 | 24941 | Security | 3 SWS | Lecture /  | Müller-Quade, Strufe |
| Exams | | | | | |
| WT 20/21 | 7500290 | Security | | | Müller-Quade, Strufe |
| ST 2021 | 7524941 | Security | | | Müller-Quade, Strufe |



Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled





T

5.259 Course: Selected Issues in Critical Information Infrastructures [T-WIWI-109251]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104403 - Critical Digital Infrastructures

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | |
|----------|---------|--|--|--|
| WT 20/21 | 2512403 | Practical Course Blockchain Hackathon (Master) | | Practical course /  Sunyaev, Kannengießer, Sturm |
| ST 2021 | 2512403 | Advanced Lab Blockchain Hackathon (Master) | | Practical course /  Sunyaev, Beyene, Kannengießer |
| Exams | | | | |
| ST 2021 | 7900172 | Lab Blockchain Hackathon (Master) | | Sunyaev |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO). Details will be announced in the respective course.

Prerequisites

None.

Annotation


T-WIWI-109251 "Selected Issues in Critical Information Infrastructures" serves to credit an extracurricular course in the module "Critical Digital Infrastructures".




T

5.260 Course: Selected Legal Issues of Internet Law [T-INFO-108462]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [M-INFO-101215 - Intellectual Property Law](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|---|-------|---|--------|
| ST 2021 | 24821 | Selected legal issues of Internet law | 2 SWS | Colloquium (K /  | Dreier |
| Exams | | | | | |
| ST 2021 | 7500226 | Selected legal issues of Internet law | | | Dreier |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.261 Course: Selected Topics in Cryptography [T-INFO-101373]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: [M-INFO-101198 - Advanced Topics in Cryptography](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 3 | Grade to a third | Each summer term | 1 |

T

5.262 Course: Selling IT-Solutions Professionally [T-INFO-101977]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101208 - Innovative Concepts of Data and Information Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|----------------------|---------|---------------|------------|---------|
| Completed coursework | 1,5 | pass/fail | Irregular | 1 |

**5.263 Course: Semantic Web Technologies [T-WIWI-110848]**

Responsible: Tobias Christof Käfer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101455 - Web Data Management](#)
[M-WIWI-101456 - Intelligent Systems and Services](#)
[M-WIWI-105366 - Artificial Intelligence](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|---|-------|------------|-----------------------|
| ST 2021 | 2511310 | Semantic Web Technologies | 2 SWS | Lecture / | Färber, Käfer, Heling |
| ST 2021 | 2511311 | Exercises to Semantic Web Technologies | 1 SWS | Practice / | Färber, Käfer, Heling |
| Exams | | | | | |
| WT 20/21 | 7900022 | Semantic Web Technologies (Registration until 08 February 2021) | | | Sure-Vetter |
| ST 2021 | 7900028 | Semantic Web Technologies (Registration until 12 July 2021) | | | Färber |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

The assessment consists of an 1h written exam following §4, Abs. 2, 1 of the examination regulation or of an oral exam (20 min) following §4, Abs. 2, 2 of the examination regulation.

The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites

None

Recommendation

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required.

Below you will find excerpts from events related to this course:

**Semantic Web Technologies**

2511310, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

**Lecture (V)
Online**

Content

The aim of the Semantic Web is to make the meaning (semantics) of data on the web usable in intelligent systems, e.g. in e-commerce and internet portals

Central concepts are the representation of knowledge in form of RDF and ontologies, the access via Linked Data, as well as querying the data by using SPARQL. This lecture provides the foundations of knowledge representation and processing for the corresponding technologies and presents example applications.

The following topics are covered:

- Resource Description Framework (RDF) and RDF Schema (RDFS)
- Web Architecture and Linked Data
- Web Ontology Language (OWL)
- Query language SPARQL
- Rule languages
- Applications

Learning objectives:

The student

- understands the motivation and foundational ideas behind Semantic Web and Linked Data technologies, and is able to analyse and realise systems
- demonstrates basic competency in the areas of data and system integration on the web
- masters advanced knowledge representation scenarios involving ontologies

Recommendations:

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required. Knowledge of modeling with UML is required.

Workload:

- The total workload for this course is approximately 135 hours
- Time of presentness: 45 hours
- Time of preparation and postprocessing: 60 hours
- Exam and exam preparation: 30 hours

Literature

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: *Semantic Web – Grundlagen*. Springer, 2008.
- John Domingue, Dieter Fensel, James A. Hendler (Editors). *Handbook of Semantic Web Technologies*. Springer, 2011.

Weitere Literatur

- S. Staab, R. Studer (Editors). *Handbook on Ontologies*. International Handbooks in Information Systems. Springer, 2003.
- Tim Berners-Lee. *Weaving the Web*. Harper, 1999 geb. 2000 Taschenbuch.
- Ian Jacobs, Norman Walsh. *Architecture of the World Wide Web, Volume One*. W3C Recommendation 15 December 2004. <http://www.w3.org/TR/webarch/>
- Dean Allemang. *Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL*. Morgan Kaufmann, 2008.
- Tom Heath and Chris Bizer. *Linked Data: Evolving the Web into a Global Data Space*. Synthesis Lectures on the Semantic Web: Theory and Technology, 2011.

**Exercises to Semantic Web Technologies**

2511311, SS 2021, 1 SWS, Language: English, [Open in study portal](#)

Practice (Ü)
Online

Content

The exercises are related to the lecture Semantic Web Technologies.

Multiple exercises are held that capture the topics, held in the lecture Semantic Web Technologies, and discuss them in detail. Thereby, practical examples are given to the students in order to transfer theoretical aspects into practical implementation.

The following topics are covered:

- Resource Description Framework (RDF) and RDF Schema (RDFS)
- Web Architecture and Linked Data
- Web Ontology Language (OWL)
- Query language SPARQL
- Rule languages
- Applications

Learning objectives:

The student

- understands the motivation and foundational ideas behind Semantic Web and Linked Data technologies, and is able to analyse and realise systems
- demonstrates basic competency in the areas of data and system integration on the web
- masters advanced knowledge representation scenarios involving ontologies

Recommendations:

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required. Knowledge of modeling with UML is required.

Literature

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web – Grundlagen. Springer, 2008.
- John Domingue, Dieter Fensel, James A. Hendler (Editors). Handbook of Semantic Web Technologies. Springer, 2011.

Weitere Literatur




- S. Staab, R. Studer (Editors). Handbook on Ontologies. International Handbooks in Information Systems. Springer, 2003.
- Tim Berners-Lee. Weaving the Web. Harper, 1999 geb. 2000 Taschenbuch.
- Ian Jacobs, Norman Walsh. Architecture of the World Wide Web, Volume One. W3C Recommendation 15 December 2004. <http://www.w3.org/TR/webarch/>
- Dean Allemang. Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL. Morgan Kaufmann, 2008.
- Tom Heath and Chris Bizer. Linked Data: Evolving the Web into a Global Data Space. Synthesis Lectures on the Semantic Web: Theory and Technology, 2011.

**5.264 Course: Seminar in Business Administration A (Master) [T-WIWI-103474]****Responsible:** Professorenschaft des Fachbereichs Betriebswirtschaftslehre**Organisation:** KIT Department of Economics and Management**Part of:** M-WIWI-102736 - Seminar Module Economic Sciences

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|----------|---------|--|---------|-----------|--|
| WT 20/21 | 2500006 | Seminar Human Resource Management (Master) | 2 SWS | Seminar / | Nieken, Mitarbeiter |
| WT 20/21 | 2500007 | Seminar Human Resources and Organizations (Master) | 2 SWS | Seminar / | Nieken, Mitarbeiter |
| WT 20/21 | 2500019 | Digital Citizen Science | 2 SWS | Seminar / | Weinhardt, Volkamer, Mayer |
| WT 20/21 | 2500043 | Collaborative Development of Conversational Agents | 3 SWS | Seminar / | Mädche, Gnewuch |
| WT 20/21 | 2500125 | Current Topics in Digital Transformation Seminar | 3 SWS | Seminar / | Mädche |
| WT 20/21 | 2530293 | | 2 SWS | Seminar / | Ruckes, Hoang, Benz, Strych, Luedecke, Silbereis, Wiegatz |
| WT 20/21 | 2530372 | Advances in Financial Machine Learning | 2 SWS | Seminar / | Ulrich |
| WT 20/21 | 2540442 | Quantitative descriptions of human behavior using R | 2,5 SWS | Seminar / | Scheibehenne, Liu |
| WT 20/21 | 2540443 | Psychologische Prozesse bei individuellen Entscheidungen | 2 SWS | Seminar / | Scheibehenne, Seidler |
| WT 20/21 | 2540473 | Data Science in Service Management | 2 SWS | Seminar / | Haubner, Dann, Badewitz, Stoeckel |
| WT 20/21 | 2540475 | Electronic Markets & User behavior | 2 SWS | Seminar / | Knierim |
| WT 20/21 | 2540477 | Digital Experience and Participation | 2 SWS | Seminar / | Straub, Peukert, Hoffmann, Puzmaz, Willrich, Kloepper, Fegert, Greif-Winzrieth |
| WT 20/21 | 2540478 | Smart Grids and Energy Markets | 2 SWS | Seminar / | Staudt, Richter, Huber, vom Scheidt, Golla, Schmidt, Henni, Meinke |
| WT 20/21 | 2540510 | Master Seminar in Data Science and Machine Learning | 2 SWS | Seminar | Geyer-Schulz, Schweigert, Schweizer, Nazemi |
| WT 20/21 | 2540557 | Information Systems and Service Design Seminar | 3 SWS | Seminar | Mädche |
| WT 20/21 | 2540559 | Digital Service Design Seminar | 3 SWS | Seminar | Mädche |
| WT 20/21 | 2545107 | Methoden im Innovationsmanagement | 2 SWS | Seminar / | Koch |
| WT 20/21 | 2545111 | Methoden entlang des Innovationsprozesses | 2 SWS | Seminar / | Beyer |
| WT 20/21 | 2550493 | Hospital Management | 2 SWS | Seminar | Hansis |
| WT 20/21 | 2579910 | Entrepreneurial Strategy and Financing of Start-Ups | 2 SWS | Seminar / | Burkardt |

| | | | | | |
|----------|---------|---|-------|-------------|--|
| WT 20/21 | 2579919 | Seminar Management Accounting - Special Topics | 2 SWS | Seminar / 🗎 | Riar, Wouters, Ebinger |
| WT 20/21 | 2581976 | Seminar in Production and Operations Management I | 2 SWS | Seminar / 🗎 | Glöser-Chahoud, Schultmann |
| WT 20/21 | 2581977 | Seminar in Production and Operations Management II | 2 SWS | Seminar / 🗎 | Volk, Schultmann |
| WT 20/21 | 2581978 | Seminar in Production and Operations Management III | 2 SWS | Seminar / 🗎 | Wiens, Schultmann |
| WT 20/21 | 2581980 | | 2 SWS | Seminar / 🗎 | Yilmaz, Fraunholz, Dehler-Holland, Kraft |
| WT 20/21 | 2581981 | | 2 SWS | Seminar / 🗎 | Ardone, Sandmeier, Scharnhorst |
| WT 20/21 | 2581990 | | 2 SWS | Seminar | Schumacher, Schultmann |
| ST 2021 | 2400121 | Interactive Analytics Seminar | 2 SWS | / 🗎 | Beigl, Mädche, Pescara |
| ST 2021 | 2500007 | Food Choice | 2 SWS | Seminar / 🗎 | Seidler, Scheibehenne |
| ST 2021 | 2500043 | Collaborative Development of Conversational Agents | 3 SWS | Seminar / 🗎 | Mädche, Gnewuch |
| ST 2021 | 2500125 | Current Topics in Digital Transformation Seminar | 3 SWS | Seminar / 🗎 | Mädche |
| ST 2021 | 2530372 | Advances in Financial Machine Learning | 2 SWS | Seminar / 🗎 | Ulrich |
| ST 2021 | 2530580 | Seminar in Finance (Master) - Corona crisis and the financial markets | | Seminar / 🗎 | Uhrig-Homburg |
| ST 2021 | 2540473 | Business Data Analytics | 2 SWS | Seminar / 🗎 | Dann, Stoeckel, Grote, Badewitz |
| ST 2021 | 2540475 | Electronic Markets & User Behavior | | Seminar / 🗎 | Knierim, Dann, Jaquart |
| ST 2021 | 2540477 | Digital Experience & Participation | 2 SWS | Seminar / 🗎 | Peukert, Greif-Winzrieth |
| ST 2021 | 2540478 | Smart Grid Economics & Energy Markets | 2 SWS | Seminar / 🗎 | Staudt, Huber, Richter, vom Scheidt, Golla, Henni, Schmidt, Meinke, Qu |
| ST 2021 | 2540510 | Master Seminar in Data Science and Machine Learning | 2 SWS | Seminar / 🗎 | Geyer-Schulz |
| ST 2021 | 2540557 | Information Systems and Service Design Seminar | 3 SWS | Seminar / 🗎 | Mädche |
| ST 2021 | 2540559 | Digital Service Design Seminar | 3 SWS | Seminar / 🗎 | Mädche |
| ST 2021 | 2540588 | Economic Psychology in Action | 2 SWS | Seminar / 🗎 | Liu |
| ST 2021 | 2545002 | Entrepreneurship Research | 2 SWS | Seminar / 🗎 | Henn, Manthey, Terzidis |
| ST 2021 | 2550493 | Hospital Management | 2 SWS | Block / 🗎 | Hansis |
| ST 2021 | 2571180 | Seminar in Marketing und Vertrieb (Master) | 2 SWS | Seminar / 🗎 | Klarmann, Mitarbeiter |
| ST 2021 | 2573012 | Seminar Human Resource Management (Master) | 2 SWS | Seminar / 🗎 | Nieken, Mitarbeiter |
| ST 2021 | 2573013 | Seminar Human Resources and Organizations (Master) | 2 SWS | Seminar / 🗎 | Nieken, Mitarbeiter |
| ST 2021 | 2579909 | Seminar Management Accounting | 2 SWS | Seminar / 🗎 | Wouters, Hammann, Disch |
| ST 2021 | 2579910 | Entrepreneurial Strategy and Financing of Start-Ups | 2 SWS | Seminar / 🗎 | Burkardt |
| ST 2021 | 2579919 | Seminar in Management Accounting - Special Topics | 2 SWS | Seminar / 🗎 | Ebinger |
| ST 2021 | 2581030 | Seminar Energiewirtschaft IV | 2 SWS | Seminar / 🗎 | Plötz |

| | | | | | |
|--------------|--------------|--|-------|---|--------------------|
| ST 2021 | 2581977 | Seminar Produktionswirtschaft und Logistik II | 2 SWS | Seminar /  | Volk, Schultmann |
| ST 2021 | 2581980 | Seminar Energiewirtschaft II | 2 SWS | Seminar /  | Fichtner |
| ST 2021 | 2581990 | | 2 SWS | Seminar /  | Schultmann |
| Exams | | | | | |
| WT 20/21 | 00042 | Seminar Business Data Analytics | | | Weinhardt |
| WT 20/21 | 7900017 | Seminar Smart Grid and Energy Markets | | | Weinhardt |
| WT 20/21 | 7900037 | Seminar in Business Administration A (Master) | | | Satzger |
| WT 20/21 | 7900106 | Hospital Management | | | Nickel |
| WT 20/21 | 7900125 | Current Topics in Digital Transformation Seminar | | | Mädche |
| WT 20/21 | 7900133 | Digital Service Design Seminar | | | Mädche |
| WT 20/21 | 7900151 | Master Seminar in Data Science and Machine Learning | | | Geyer-Schulz |
| WT 20/21 | 7900163 | Seminar Human Resource Management (Master) | | | Nieken |
| WT 20/21 | 7900164 | Seminar Human Resources and Organizations (Master) | | | Nieken |
| WT 20/21 | 7900165 | Seminar Digital Experience and Participation | | | Weinhardt |
| WT 20/21 | 7900184 | Seminar in Finance (Master) | | | Ruckes |
| WT 20/21 | 7900203 | Seminar in Finance | | | Uhrig-Homburg |
| WT 20/21 | 7900221 | Advances in Financial Machine Learning | | | Ulrich |
| WT 20/21 | 7900233 | Information Systems and Service Design Seminar | | | Mädche |
| WT 20/21 | 7900237 | Case Studies Seminar: Innovation Management | | | Weissenberger-Eibl |
| WT 20/21 | 7900239 | Technologies for Innovation Management | | | Weissenberger-Eibl |
| WT 20/21 | 7900277 | Entrepreneurial Strategy and Financing of Start-Ups | | | Lindstädt |
| WT 20/21 | 7900291 | Psychological processes in individual decisions | | | Scheibehenne |
| WT 20/21 | 7900306 | Methods in Innovation Management | | | Weissenberger-Eibl |
| WT 20/21 | 7900307 | Strategic Foresight China | | | Weissenberger-Eibl |
| WT 20/21 | 7900310 | Methods along the Innovation process | | | Weissenberger-Eibl |
| WT 20/21 | 7900315 | Quantitative descriptions of human behavior using R | | | Scheibehenne |
| WT 20/21 | 7900327 | Electronic Markets & User behavior (Seminar) | | | Weinhardt |
| WT 20/21 | 7900330 | Seminar Digital Citizen Science | | | Weinhardt |
| WT 20/21 | 79-2579919-M | Seminar Management Accounting - Special Topics (Master) | | | Wouters |
| WT 20/21 | 7981976 | Seminar in Production and Operations Management I | | | Schultmann |
| WT 20/21 | 7981977 | Seminar in Production and Operations Management II | | | Schultmann |
| WT 20/21 | 7981978 | Seminar in Production and Operations Management III | | | Schultmann |
| WT 20/21 | 7981979 | Seminar in Business Administration A (Master) | | | Fichtner |
| WT 20/21 | 7981980 | Seminar in Business Administration A (Master) | | | Fichtner |
| WT 20/21 | 7981981 | Seminar in Business Administration (Bachelor) | | | Fichtner |
| ST 2021 | 7500148 | Proseminar: Practical Seminar: Interactive Analytics | | | Beigl, Mädche |
| ST 2021 | 7900008 | Hospital Management | | | Nickel |
| ST 2021 | 7900036 | Collaborative Development of Conversational Agents | | | Mädche |
| ST 2021 | 7900052 | Entrepreneurship Research | | | Terzidis |
| ST 2021 | 7900093 | Seminar in Business Administration A | | | Weinhardt |
| ST 2021 | 7900101 | Seminar Human Resource Management (Master) | | | Nieken |
| ST 2021 | 7900190 | Current Topics in Digital Transformation Seminar | | | Mädche |
| ST 2021 | 7900219 | Entrepreneurial Strategy and Financing of Start-Ups | | | Lindstädt |
| ST 2021 | 7900233 | Seminar in Marketing and Sales | | | Klarmann |
| ST 2021 | 7900244 | Digital Service Design Seminar | | | Mädche |
| ST 2021 | 7900261 | Information Systems and Design (ISSD) Seminar | | | Mädche |
| ST 2021 | 7900265 | Interactive Analytics Seminar | | | Mädche |
| ST 2021 | 79-2579909-M | Seminar Management Accounting (Master) | | | Wouters |
| ST 2021 | 79-2579919-M | Seminar Management Accounting - Special Topics (Master) | | | Wouters |
| ST 2021 | 79-2579929-M | Seminar Management Accounting - Entrepreneurship Topics (Master) | | | Wouters |

| | | | |
|---------|---------|---|------------|
| ST 2021 | 7981976 | Seminar in Production and Operations Management I | Schultmann |
| ST 2021 | 7981977 | Seminar in Production and Operations Management II | Schultmann |
| ST 2021 | 7981978 | Seminar in Production and Operations Management III | Schultmann |
| ST 2021 | 7981979 | Seminar Energy Economics I | Fichtner |
| ST 2021 | 7981980 | Seminar Energy Economics II | Fichtner |
| ST 2021 | 7981981 | Seminar Energy Economics III | Fichtner |

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 Human Resource Management (Master) 2500006, WS 20/21, 2 SWS, Language: German, Open in study portal | Seminar (S) Online |
|--|---|-------------------------------------|

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

Literature

Selected journal articles and books.

**Seminar Human Resources and Organizations (Master)**2500007, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)**Seminar (S)
Online****Content**

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues

Blockveranstaltung siehe Homepage

**Digital Citizen Science**2500019, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)
Online****Content**

Digital Citizen Science is an innovative approach to conduct field research - interactively and in the real world. Especially in times of social distancing measures essential questions about how private lives are changing are investigated. Who is experiencing more stress during HomeOffice hours? Who is flourishing while learning at home because flow is experienced more often? Which formats of digital cooperation are fostering social contacts and bonding? These and other questions that target the main topic: Well-being @Home are focused in these seminar projects.

The seminar theses are supervised by academics from multiple institutes that are working together on the topic of Digital Citizen Science arbeiten. Involved are the research groups of Prof. Mädche, Prof. Nieken, Prof. Scheibehenne, Prof. Szech, Prof. Volkamer, Prof. Weinhardt and Prof. Woll.

**Collaborative Development of Conversational Agents**2500043, WS 20/21, 3 SWS, Language: English, [Open in study portal](#)**Seminar (S)
Online**

Content

This course focuses on the design, development, deployment, and evaluation of conversational agents (e.g., chatbots or voice assistants) for a given problem domain (e.g., customer service, team collaboration). The aim of the course is to introduce conceptual and technical foundations of conversational agents, relevant theories of human-computer interaction, and design guidelines for different classes of conversational agents. In addition, the course will introduce the human-centered design approach adapted to the design of conversational agents, including several qualitative and quantitative evaluation approaches.

The entire course is held virtually with no physical meetings, providing a first experience for future workplace scenarios. The course is a joint offering together with Saarland University (Prof. Stefan Morana) and Technische Universität Dresden (Prof. Benedikt Brendel). Students will work collaboratively in virtual teams with students from the other universities (i.e., one student per university in one team). Each student team will iteratively design, develop, and evaluate a conversational agent using contemporary technology tools (e.g., Google Dialogflow, Microsoft Bot Framework, Rasa). The teams document their activities and results in a project report. The project report as well as the conversational agent prototype are the basis for the grading of the course.

The entire course is limited to 15 participants (5 per university) and requires a short registration. More details will be made available on our website.

After completing this course, the course participants will be able to:

- explain conceptual and technical foundations of conversational agents
- perform the human-centered design approach to design, develop, and evaluate a conversational agent
- develop conversational agents using state-of-the-art tools and frameworks
- apply qualitative and quantitative methods to evaluate conversational agent prototypes

Requirements

- Programming skills are beneficial
- Experience or general interest in human-computer interaction
- English communication skills

Literature

Relevant literature will be made available in the seminar.



Advances in Financial Machine Learning

2530372, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)
Online

Content

Machine learning (ML) is changing virtually every aspect of our lives. Today ML algorithms accomplish tasks that until recently only expert humans could perform. As it relates to finance, this is the most exciting time to adopt a disruptive technology that will transform how everyone invests for generations.

In this seminar we will apply modern machine learning techniques hands on to important computational risk and asset management problems. In particular we will use the state of the art Python programming language to implement investment related applications and/ or Finance 4.0 risk management solutions.

In a bi-weekly schedule you and your supervisor will first learn and discuss important machine learning concepts and then apply it within a practical FinTech project to real-world data. As a prerequisite students should already have some basic Python and data science skills.

Organizational issues

14-tägig, tba

Literature

Literatur wird in der ersten Vorlesung bekannt gegeben.



Quantitative descriptions of human behavior using R

2540442, WS 20/21, 2,5 SWS, Language: English, [Open in study portal](#)

Seminar (S)
Online

Content**Description**

The goal of this course is to help students develop a basic understanding of how quantitative modeling and simulations are used in behavioral research, especially in tracking/explaining behavior observed in experiments. The course will take a seminar form. Students will be assigned to read one journal article per week, with special attention paid to the quantitative/modeling part of the paper. In the weekly lecture/discussion that follows, we will talk about the article, try to reproduce the models/simulations along with their predictions and results using R, and discuss possible extensions of the work.

English will be the language used in all lectures, discussions, course materials, and assessments.

Competence Certificate

The assessment consists of writing two R scripts that implement certain functions specified by the instructor. The first assessment will be due after 8 weeks and the second will be due one week after the last lecture.

Workload

Students are expected to spend a total of 90 hours (30 hours per ECTS) on this class. Weekly lecture/discussion will have an average duration of 2 hours. Reading and programming assignments will take an average of 4 hours each week.

Prerequisite

Basic knowledge of the R language. Familiarity with concepts and operations such as vectors, functions, reading and writing data, conditional statements is considered sufficient.

**Data Science in Service Management**

2540473, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Content

wird auf deutsch und englisch gehalten

Organizational issues

Blockveranstaltung, siehe WWW

**Master Seminar in Data Science and Machine Learning**

2540510, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

**Digital Service Design Seminar**

2540559, WS 20/21, 3 SWS, [Open in study portal](#)

Seminar (S)

**Methoden im Innovationsmanagement**

2545107, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

The seminar "Methods in Innovation Management" aims at the discussion and development of different methods for the structured generation of ideas in selected contexts. In a block seminar, methods and contexts are discussed, from which seminar topics are defined with the participants. These topics are to be worked on independently using methods and procedures. The results will be presented at a presentation date and then a written seminar paper will be prepared. This means that creativity methods and their combination will be presented and applied. The methods are worked on in a structured form and process-like sequence in order to clarify the advantages and disadvantages of different methods.

Literature

Werden in der ersten Veranstaltung bekannt gegeben.

**Hospital Management**

2550493, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

**Seminar Management Accounting - Special Topics**

2579919, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)
On-Site

Content

The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively prediscbed. The seminar course is concentrated in several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources).

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Workload:

- The total workload for this course is approximately 90 hours. For further information see German version.

Note:

- Maximum of 16 students.

Literature

Will be announced in the course.

**Interactive Analytics Seminar**

2400121, SS 2021, 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

**Collaborative Development of Conversational Agents**

2500043, SS 2021, 3 SWS, Language: English, [Open in study portal](#)

Seminar (S)
Online

Content

This course focuses on the design, development, deployment, and evaluation of conversational agents (e.g., chatbots or voice assistants) for a given problem domain (e.g., customer service, team collaboration). The aim of the course is to introduce conceptual and technical foundations of conversational agents, relevant theories of human-computer interaction, and design guidelines for different classes of conversational agents. In addition, the course will introduce the human-centered design approach adapted to the design of conversational agents, including several qualitative and quantitative evaluation approaches.

The entire course is held virtually with no physical meetings, providing a first experience for future workplace scenarios. The course is a joint offering together with Saarland University (Prof. Stefan Morana) and Technische Universität Dresden (Prof. Benedikt Brendel). Students will work collaboratively in virtual teams with students from the other universities (i.e., one student per university in one team). Each student team will iteratively design, develop, and evaluate a conversational agent using contemporary technology tools (e.g., Google Dialogflow, Microsoft Bot Framework, Rasa). The teams document their activities and results in a project report. The project report as well as the conversational agent prototype are the basis for the grading of the course.

The entire course is limited to 15 participants (5 per university) and requires a short registration. More details will be made available on our website.

After completing this course, the course participants will be able to:


- explain conceptual and technical foundations of conversational agents
- perform the human-centered design approach to design, develop, and evaluate a conversational agent
- develop conversational agents using state-of-the-art tools and frameworks
- apply qualitative and quantitative methods to evaluate conversational agent prototypes

Requirements

- Programming skills are beneficial
- Experience or general interest in human-computer interaction
- English communication skills

Literature

Relevant literature will be made available in the seminar.

| | | |
|---|---|-------------------------------------|
|  | Advances in Financial Machine Learning 2530372, SS 2021, 2 SWS, Language: English, Open in study portal | Seminar (S) Online |
|---|---|-------------------------------------|

Content

Machine learning (ML) is changing virtually every aspect of our lives. Today ML algorithms accomplish tasks that until recently only expert humans could perform. As it relates to finance, this is the most exciting time to adopt a disruptive technology that will transform how everyone invests for generations.

In this seminar we will apply modern machine learning techniques hands on to important computational risk and asset management problems. In particular we will use the state of the art Python programming language to implement investment related applications and/ or Finance 4.0 risk management solutions.


In a bi-weekly schedule you and your supervisor will first learn and discuss important machine learning concepts and then apply it within a practical FinTech project to real-world data. As a prerequisite students should already have some basic Python and data science skills.


Organizational issues

14-tägig, tba

Literature

Literatur wird in der ersten Vorlesung bekannt gegeben.

| | | |
|---|---|-------------------------------------|
|  | Master Seminar in Data Science and Machine Learning 2540510, SS 2021, 2 SWS, Language: German/English, Open in study portal | Seminar (S) Online |
|---|---|-------------------------------------|

| | | |
|---|---|-------------------------------------|
|  | Information Systems and Service Design Seminar 2540557, SS 2021, 3 SWS, Language: English, Open in study portal | Seminar (S) Online |
|---|---|-------------------------------------|

Content

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the research group ISSD (Prof. Mädche). The research group "Information Systems & Service Design" (ISSD) headed by Prof. Mädche focuses in research, education, and innovation on designing interactive intelligent systems. It is positioned at the intersection of Information Systems and Human-Computer Interaction (HCI).

In the seminar, participants will get deeper insights in a contemporary research topic in the field of information systems, specifically interactive intelligent systems.

The actual seminar topics will be derived from current research activities of the research group. Our research assistants offer a rich set of topics from our research clusters (digital experience and participation, intelligent enterprise systems, or digital services design & innovation). Students can select among these topics individually depending on their personal interests. The seminar is carried out in the form of a literature-based thesis project. In the seminar, students will acquire the important methodological skills of running a systematic literature review.

Learning Objectives

- focus on a contemporary topic at the intersection of Information Systems and Human-Computer Interaction (HCI), specifically interactive intelligent systems
- carry out a structured literature search for a given topic
- aggregate the collected information in a suitable way to present and extract knowledge
- write a seminar thesis following academic writing standards
- deliver a presentation in a scientific context in front of an auditorium

Prerequisites


No specific prerequisites are required for the seminar.

Literature

Further literature will be made available in the seminar.

Organizational issues

Termine werden bekannt gegeben

| | | |
|---|---|-------------------------------------|
|  | Digital Service Design Seminar 2540559, SS 2021, 3 SWS, Language: English, Open in study portal | Seminar (S) Online |
|---|---|-------------------------------------|

Content**Description**

In this seminar, a team of students addresses a real-world design challenge of an IISM cooperation partner. Students learn and apply design methods, techniques, and tools to explore the problem and deliver a solution in the form of an innovative prototype

Learning objectives

The students

- explore a real-world digital service design challenge
- understand the human-centered design process and apply selected design techniques & tools
- deliver a digital service prototype as a potential solution for the challenge

Prerequisites


No specific prerequisites are required for the seminar

Literature

Further literature will be made available in the seminar.

Organizational issues

Termine werden bekannt gegeben

| | | |
|---|--|-------------------------------------|
|  | Economic Psychology in Action 2540588, SS 2021, 2 SWS, Language: English, Open in study portal | Seminar (S) Online |
|---|--|-------------------------------------|

Content
Description

This blocked event contains 3 stages.

In Stage 1, students meet online for one day and experience recent economic psychology research as participants. The research topics will mainly consist of novel economic games with certain level of strategic depth (i.e., we will not play simple games like rock paper scissors, nor we will play games that many people are familiar with like the prisoner's dilemma).

In Stage 2, students will receive the data from the games they played in Stage 1 along with a few journal articles assigned by the instructor on related topics. Based on reading, they choose one of the datasets from Stage 1 to write up a short report.

In Stage 3, students will try to design and conduct a study on a related topic themselves based on what they have learned in the previous stages. They will collect their own data and write a research report. The nature of this project is to be determined together by the students and instructor. It would either be ideas generated by the students themselves, or something assigned by the instructor.

English will be the language used in all discussions, course materials, and assessments.

Competence Certificate


The assessment is based on the short report in Stage 2 and the research report in Stage 3.

Workload

Students are expected to spend a total of 90 hours (30 hours per ECTS), including meeting and assignments, on this seminar.

Organizational issues

Blockveranstaltung, Termine werden bekanntgegeben


| | | |
|---|---|-------------------------------------|
|  | Entrepreneurship Research 2545002, SS 2021, 2 SWS, Language: German, Open in study portal | Seminar (S) Online |
|---|---|-------------------------------------|

Organizational issues

Block am 21.04., 05.05., 14.07.

Literature

Wird im Seminar bekannt gegeben.

| | | |
|---|---|-----------------------------------|
|  | Hospital Management 2550493, SS 2021, 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

von Montag, 17. Mai bis Samstag, 22. Mai jeweils von 7:30 bis 9:15 Uhr

| | | |
|---|--|-------------------------------------|
|  | Seminar Human Resource Management (Master) 2573012, SS 2021, 2 SWS, Language: German, Open in study portal | Seminar (S) Online |
|---|--|-------------------------------------|

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues

Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

**Seminar Human Resources and Organizations (Master)**

2573013, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)
Online**

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues

Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

**Seminar Management Accounting**

2579909, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)
Online**

Content

The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. You are to a large extent free to select your own topic. The seminar course is concentrated in four meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources).

Workload:

- The total workload for this course is approximately 90 hours. For further information see German version.

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Note:

- Maximum of 16 students.

Organizational issues

Geb.05.20, 2A-12.1; Termine werden bekannt gegeben

Literature

Will be announced in the course.

**Seminar in Management Accounting - Special Topics**

2579919, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)
Online**

Content

The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively prediscibed. The seminar course is concentrated in several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources).

Workload:

- The total workload for this course is approximately 90 hours. For further information see German version.

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Note:

- Maximum of 16 students.

Organizational issues

Geb.05.20, 2A-12.1; Termine werden bekannt gegeben

Literature

Will be announced in the course.

T

5.265 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 |

Competence Certificate

The assessment is carried out through a term paper within the range of 12 to 15 pages, a presentation of the results of the work in a seminar meeting, and active participation in the discussions of the seminar meeting (§ 4 (2), 3 SPO).

The final grade is composed of the weighted scored examinations (Essay 50%, 40% oral presentation, active participation 10%).

Prerequisites

None

Recommendation

At least one of the lectures "Theory of Endogenous Growth" or "Innovation Theory and Policy" should be attended in advance, if possible.

T

5.266 Course: Seminar in Economics A (Master) [T-WIWI-103478]

Responsible: Professorenschaft des Fachbereichs Volkswirtschaftslehre**Organisation:** KIT Department of Economics and Management**Part of:** M-WIWI-102736 - Seminar Module Economic Sciences

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|----------|---------|---|-------|-----------|----------------------------------|
| WT 20/21 | 2560140 | Topics in Political Economy (Bachelor) | 2 SWS | Seminar / | Szech, Huber |
| WT 20/21 | 2560142 | Topics in Political Economy (Master) | 2 SWS | Seminar / | Szech, Huber |
| WT 20/21 | 2560143 | Morals & Social Behavior (Master) | 2 SWS | Seminar / | Szech, Zhao |
| WT 20/21 | 2561208 | Selected aspects of European transport planning and -modelling | 1 SWS | Seminar / | Szimba |
| WT 20/21 | 2561281 | Wirtschaftspolitisches Seminar | 2 SWS | Seminar / | Ott |
| ST 2021 | 2500004 | Introduction to Statistical Machine Learning | 2 SWS | Seminar / | Schienle, Lerch |
| ST 2021 | 2521310 | Advanced Topics in Econometrics | 2 SWS | Seminar / | Schienle, Krüger, Görden, Koster |
| ST 2021 | 2560233 | Seminar zur Luftverkehrspolitik | | Seminar / | Mitusch, Wisotzky |
| ST 2021 | 2560282 | Wirtschaftspolitisches Seminar | 2 SWS | Seminar / | Ott, Assistenten |
| ST 2021 | 2560552 | Overcoming the Corona Crisis, Seminar Morals and Social Behavior (Master) | 2 SWS | Seminar / | Szech, Zhao |
| ST 2021 | 2560555 | Markets for Attention and the Digital Economy Seminar on Topics in Political Economy (Bachelor) | 2 SWS | Seminar / | Szech, Huber |
| Exams | | | | | |
| WT 20/21 | 7900139 | Seminar in Economics (Bachelor/Master) | | | Mitusch |
| WT 20/21 | 7900140 | Seminar in Economics A (Master) Digital Markets | | | Szech |
| WT 20/21 | 7900216 | Seminar in Macroeconomics | | | Brumm |
| WT 20/21 | 7900255 | How (not) to vote - Advantages and pitfalls of common voting methods | | | Puppe |
| WT 20/21 | 7900257 | Date Mining. Seminar in Economics A (Master) | | | Nakhaeizadeh |
| WT 20/21 | 7900278 | Seminar on Morals and Social Behavior (M.Sc.) | | | Szech |
| WT 20/21 | 7900281 | Organization and management of development projects | | | Mitusch |
| WT 20/21 | 7900297 | Topics in Experimental Economics | | | Reiß |
| WT 20/21 | 79sefi2 | Seminar in Economics A (Master) | | | Wigger |
| ST 2021 | 7900033 | Introduction to Statistical Machine Learning | | | Schienle |
| ST 2021 | 7900059 | Markets for Attention and the Digital Economy (Master) | | | Szech |
| ST 2021 | 7900065 | Seminar in Macroeconomics I | | | Brumm |
| ST 2021 | 7900131 | Overcoming the Corona Crisis (Master) | | | Szech |
| ST 2021 | 7900221 | Seminar in Macroeconomics II | | | Brumm |
| ST 2021 | 7900248 | Social Preferences in Behavioral Economics | | | Szech |
| ST 2021 | 79sefi2 | Seminar Death, Mistake & Fraud in Science 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:

| | | |
|---|--|-------------------------------------|
|  | Topics in Political Economy (Bachelor) 2560140, WS 20/21, 2 SWS, Language: English, Open in study portal | Seminar (S) Online |
|---|--|-------------------------------------|

Content


For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

Seminar Papers of 8–10 pages are to be handed in.

For bachelor students, grades will be based on the quality of presentation slides (25%) and the seminar paper (50%). Additionally each student will have to hand in one individual abstract of 75-100 words. The quality of abstracts will reflect with 25% in the final grade.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

| | | |
|---|--|-------------------------------------|
|  | Topics in Political Economy (Master) 2560142, WS 20/21, 2 SWS, Language: English, Open in study portal | Seminar (S) Online |
|---|--|-------------------------------------|

Content


For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

Seminar Papers of 8–10 pages are to be handed in.

For Master students, grades will be based on the quality of presentation slides (25%) and the seminar paper (50%). Additionally each student will have to hand in two individual abstracts – one with 75-100 words and one with 150-200 words. The quality of abstracts will reflect with 25% in the final grade.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

| | | |
|---|---|-------------------------------------|
|  | Morals & Social Behavior (Master) 2560143, WS 20/21, 2 SWS, Language: English, Open in study portal | Seminar (S) Online |
|---|---|-------------------------------------|

Content

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

Seminar Papers of 8–10 pages are to be handed in.

For Master students, grades will be based on the quality of presentation slides (25%) and the seminar paper (50%). Additionally each student will have to hand in two individual abstracts – one with 75-100 words and one with 150-200 words. The quality of abstracts will reflect with 25% in the final grade.

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.

**Introduction to Statistical Machine Learning**

2500004, SS 2021, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

**Advanced Topics in Econometrics**

2521310, SS 2021, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

**Overcoming the Corona Crisis, Seminar Morals and Social Behavior (Master)**

2560552, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)
Online

Content

Participation will be limited to 12 students.

Organizational issues

Blockveranstaltung

**Markets for Attention and the Digital Economy Seminar on Topics in Political Economy (Bachelor)**

2560555, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)
Online

Content

For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

The acceptance of students for the seminar is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Organizational issues

Blockveranstaltung

**5.267 Course: Seminar in Informatics B (Master) [T-WIWI-103480]****Responsible:** Professorenschaft des Fachbereichs Informatik**Organisation:** KIT Department of Economics and Management**Part of:** M-INFO-102822 - Seminar Module Informatics

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|----------|---------|--|-------|-----------|--|
| WT 20/21 | 2400125 | Security and Privacy Awareness | 2 SWS | Seminar / | Boehm, Volkamer, Aldag, Gottschalk, Mayer, Mossano, Düzgün |
| WT 20/21 | 2513312 | Seminar Linked Data and the Semantic Web (Bachelor) | 2 SWS | Seminar / | Färber, Käfer, Heling, Bartscherer |
| WT 20/21 | 2513313 | Seminar Linked Data and the Semantic Web (Master) | 2 SWS | Seminar / | Färber, Käfer, Heling, Bartscherer |
| WT 20/21 | 2513314 | Seminar Real-World Challenges in Data Science and Analytics (Bachelor) | 3 SWS | Seminar / | Nickel, Weinhardt, Färber, Zehnder, Brandt |
| WT 20/21 | 2513315 | Seminar Real-World Challenges in Data Science and Analytics (Master) | 3 SWS | Seminar / | Nickel, Weinhardt, Färber, Zehnder, Brandt |
| WT 20/21 | 2513500 | Seminar Cognitive Automobiles and Robots (Master) | 2 SWS | Seminar / | Zöllner |
| WT 20/21 | 2513601 | Seminar Representation Learning for Knowledge Graphs (Master) | 2 SWS | Seminar / | Sack, Alam, Dessi, Biswas |
| ST 2021 | 2513211 | Seminar Business Information Systems (Master) | 2 SWS | Seminar / | Oberweis, Fritsch, Frister, Schreiber, Schüler, Ullrich |
| ST 2021 | 2513309 | Seminar Knowledge Discovery and Data Mining (Master) | 3 SWS | Seminar / | Färber, Nguyen, Nouillet, Saier, Bartscherer |
| ST 2021 | 2513311 | Seminar Data Science & Real-time Big Data Analytics (Master) | 2 SWS | Seminar / | Färber, Riemer, Heyden, Käfer |
| ST 2021 | 2513403 | Seminar Emerging Trends in Internet Technologies (Master) | 2 SWS | Seminar / | Lins, Sunyaev, Thiebes |
| ST 2021 | 2513405 | Seminar Emerging Trends in Digital Health (Master) | 2 SWS | Seminar / | Lins, Sunyaev, Thiebes |
| ST 2021 | 2513500 | Cognitive Automobiles and Robots | 2 SWS | Seminar / | Zöllner |
| Exams | | | | | |
| WT 20/21 | 7500175 | Seminar: Energy Informatics | | | Wagner |
| WT 20/21 | 7500220 | Seminar Ubiquitous Computing | | | Beigl |
| WT 20/21 | 7900009 | Seminar Linked Data and the Semantic Web (Master) | | | Sure-Vetter |
| WT 20/21 | 7900044 | Seminar Representation Learning for Knowledge Graphs (Master) | | | Sure-Vetter |
| WT 20/21 | 7900102 | Advanced Lab Information Service Engineering (Master) | | | Sack |
| WT 20/21 | 7900119 | Seminar Cognitive Automobiles and Robots (Master) | | | Zöllner |
| WT 20/21 | 7900129 | Seminar Security and Privacy Awareness | | | Volkamer |
| WT 20/21 | 7900158 | Seminar Data Science & Real-time Big Data Analytics (Master) | | | Sure-Vetter |
| WT 20/21 | 7900160 | Seminar Real-World Challenges in Data Science and Analytics (Master) | | | Sure-Vetter |
| ST 2021 | 7900088 | Seminar Business Information Systems (Master) | | | Oberweis |
| ST 2021 | 7900128 | Seminar Emerging Trends in Internet Technologies (Master) | | | Sunyaev |

| | | | |
|---------|---------|--|-------------|
| ST 2021 | 7900146 | Seminar Emerging Trends in Digital Health (Master) | Sunyaev |
| ST 2021 | 7900147 | Cognitive Automobiles and Robots | Zöllner |
| ST 2021 | 7900198 | Seminar Data Science & Real-time Big Data Analytics (Master) | Färber |
| ST 2021 | 7900202 | Seminar Knowledge Discovery and Data Mining (Master) | Sure-Vetter |
| ST 2021 | 7900246 | Seminar Advanced Methods in Natural Language Processing: Metaphors | Sack |

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:

| | | |
|--|---|-------------------------------------|
| | Security and Privacy Awareness 2400125, WS 20/21, 2 SWS, Open in study portal | Seminar (S) Online |
|--|---|-------------------------------------|

Content

Within the framework of this interdisciplinary seminar, the topics security awareness and privacy awareness are to be considered from different perspectives. It deals with legal, information technology, psychological, social as well as philosophical aspects.

Dates:

- Kick-Off: 02.11.20
- Final version: 07.03.21
- Presentation: 22.03.21 / maybe also 23.03.21

Topics will be assigned after the Kick-Off.

Topics:

- Development of a flyer for internet security to enhance security awareness.
- Systematic Literature Review: Enhancing Email Security Interventions Accessibility for Visually Impaired Users.
- Ethical analysis of different debriefing methods for deception studies.
- What is informational privacy and what is its worth?
- Investigation of the perception of (technical) backdoors for criminal prosecution.
- Security awareness in the context of gatekeepers: Assumptions of the users versus legal responsibility.
- E-privacy regulations, what comes after the planet49 judgement (EuGH)?
- What is happening to the international data protection law after the Schreem III (privacy shield invalid) judgement?

More information for each topic will be updated as soon as possible.

ATTENTION: The seminar is only for MASTER students!

This event counts towards the KASTEL certificate. Further information on how to obtain the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php.

**Seminar Linked Data and the Semantic Web (Bachelor)**2513312, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)
Online****Content**

Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this seminar is to build applications and devise algorithms that consume, provide, or analyse Linked Data.

The Linked Data principles are a set of practices for data publishing on the web. Linked Data builds on the web architecture and uses HTTP for data access, and RDF for describing data, thus aiming towards web-scale data integration. There is a vast amount of data available published according to those principles: recently, 4.5 billion facts have been counted with information about various domains, including music, movies, geography, natural sciences. Linked Data is also used to make web-pages machine-understandable, corresponding annotations are considered by the big search engine providers. On a smaller scale, devices on the Internet of Things can also be accessed using Linked Data which makes the unified processing of device data and data from the web easy.

In this seminar, students will build prototypical applications and devise algorithms that consume, provide, or analyse Linked Data. Those applications and algorithms can also extend existing applications ranging from databases to mobile apps.

For the seminar, programming skills or knowledge about web development tools/technologies are highly recommended. Basic knowledge of RDF and SPARQL are also recommended, but may be acquired during the seminar. Students will work in groups. Seminar meetings will take place as 'Block-Seminar'.

Topics of interest include, but are not limited to:

- Travel Security
- Geo data
- Linked News
- Social Media

The exact dates and information for registration will be announced at the event page.

**Seminar Linked Data and the Semantic Web (Master)**2513313, WS 20/21, 2 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)
Online****Content**

Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this seminar is to build applications and devise algorithms that consume, provide, or analyse Linked Data.

The Linked Data principles are a set of practices for data publishing on the web. Linked Data builds on the web architecture and uses HTTP for data access, and RDF for describing data, thus aiming towards web-scale data integration. There is a vast amount of data available published according to those principles: recently, 4.5 billion facts have been counted with information about various domains, including music, movies, geography, natural sciences. Linked Data is also used to make web-pages machine-understandable, corresponding annotations are considered by the big search engine providers. On a smaller scale, devices on the Internet of Things can also be accessed using Linked Data which makes the unified processing of device data and data from the web easy.

In this seminar, students will build prototypical applications and devise algorithms that consume, provide, or analyse Linked Data. Those applications and algorithms can also extend existing applications ranging from databases to mobile apps.

For the seminar, programming skills or knowledge about web development tools/technologies are highly recommended. Basic knowledge of RDF and SPARQL are also recommended, but may be acquired during the seminar. Students will work in groups. Seminar meetings will take place as 'Block-Seminar'.

Topics of interest include, but are not limited to:

- Travel Security
- Geo data
- Linked News
- Social Media

The exact dates and information for registration will be announced at the event page.

**Seminar Real-World Challenges in Data Science and Analytics (Bachelor)**2513314, WS 20/21, 3 SWS, Language: German/English, [Open in study portal](#)**Seminar (S)
Online**

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 20/21, 3 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)
Online**

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 20/21, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)
Online**

Content

The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

**Seminar Representation Learning for Knowledge Graphs (Master)**

2513601, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)
Online**

Content

Participation is restricted to 10 students max.

Contributions of the students:

Each student will be assigned at max 2 papers on the topic. Out of which the student will have to give a seminar presentation and write a seminar report paper of 15 pages explaining the methods from at least one of the two assigned papers, in their own words.

Implementation (if applicable):

If code is available from the authors, then re-implementation of it for small scale experiments using *Google Colab* with *python*.

Teaching Team:

- Dr. Mehwish Alam
- Dr. Danilo Dessi
- M. Sc. Russa Biswas

Data representation or feature representation plays a key role in the performance of machine learning algorithms. In recent years, rapid growth has been observed in Representation Learning (RL) of words and Knowledge Graphs (KG) into low dimensional vector spaces and its applications to many real-world scenarios. Word embeddings are a low dimensional vector representation of words that are capable of capturing the context of a word in a document, semantic similarity as well as its relation with other words. Similarly, KG embeddings are a low dimensional vector representation of entities and relations from a KG preserving its inherent structure and capturing the semantic similarity between the entities. Each embedding space exhibits different semantic characteristics based on the source of information, e.g, text or KGs as well as the learning of the embedding algorithms. The same algorithm, when applied to different representations of the same training data, leads to different results due to the variation in the features encoded in the respective representations. The distributed representation of text in the form of the word and document vectors as well as of the entities and relations of the KG in form of entity and relation vectors have evolved as the key elements of various natural language processing tasks such as Entity Linking, Named Entity Recognition and disambiguation, etc. Different embedding spaces are generated for textual documents of different languages, hence aligning the embedding spaces has become a stepping stone for machine translation. On the other hand, in addition to multilingualism and domain-specific information, different KGs of the same domain have structural differences, making the alignment of the KG embeddings more challenging. In order to generate coherent embedding spaces for knowledge-driven applications such as question answering, named entity disambiguation, knowledge graph completion, etc., it is necessary to align the embedding spaces generated from different sources.

In this seminar, we would like to study the different state of the art algorithms for aligning embedding space. We would focus on two types of alignment algorithms: (1) Entity - Entity alignment, and (2) Entity - Word alignment.

Organizational issues

Registration and further information can be found in the WiWi-portal.

**Seminar Knowledge Discovery and Data Mining (Master)**

2513309, SS 2021, 3 SWS, Language: English, [Open in study portal](#)

**Seminar (S)
Online**

Content

In this seminar different machine learning and data mining methods are implemented.

The seminar includes different methods of machine learning and data mining. Participants of the seminar should have basic knowledge of machine learning and programming skills.

Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

The exact dates and information for registration will be announced at the event page.

Organizational issues

Die Anmeldung erfolgt über das WiWi Portal <https://portal.wiwi.kit.edu/>.

Für weitere Fragen bezüglich des Seminar und der behandelten Themen wenden Sie sich bitte an die entsprechenden Verantwortlichen.

Literature

Detaillierte Referenzen werden zusammen mit den jeweiligen Themen angegeben. Allgemeine Hintergrundinformationen ergeben sich z.B. aus den folgenden Lehrbüchern:

- Mitchell, T.; Machine Learning
- McGraw Hill, Cook, D.J. and Holder, L.B. (Editors) Mining Graph Data, ISBN:0-471-73190-0
- Wiley, Manning, C. and Schütze, H.; Foundations of Statistical NLP, MIT Press, 1999.



Seminar Data Science & Real-time Big Data Analytics (Master)

2513311, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)
Online

Content

In this seminar, students will design applications in teams that use meaningful and creative Event Processing methods. Thereby, students have access to an existing record.

Event processing and real-time data are everywhere: financial market data, sensors, business intelligence, social media analytics, logistics. Many applications collect large volumes of data in real time and are increasingly faced with the challenge of being able to process them quickly and react promptly. The challenges of this real-time processing are currently also receiving a great deal of attention under the term "Big Data". The complex processing of real-time data requires both knowledge of methods for data analysis (data science) and their processing (real-time analytics). Seminar papers are offered on both of these areas as well as on interface topics, the input of own ideas is explicitly desired.

Further information to the practical seminar is given under the following Link:

<http://seminar-cep.fzi.de>

Questions are answered via the e-mail address sem-ep@fzi.de.

Organizational issues

Further information as well as the registration form can be found under the following link:

<http://seminar-cep.fzi.de>

Questions are answered via the e-mail address sem-ep@fzi.de.



Cognitive Automobiles and Robots

2513500, SS 2021, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Content

The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

T







5.268 Course: Seminar in Operations Research A (Master) [T-WIWI-103481]




Responsible: Prof. Dr. Stefan Nickel
 Prof. Dr. Steffen Rebennack
 Prof. Dr. Oliver Stein

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-102736 - Seminar Module Economic Sciences

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|----------|----------------|--|-------|---|--------------------------------|
| WT 20/21 | 2550131 | Seminar on Methodical Foundations of Operations Research | 2 SWS | Seminar /  | Stein, Neumann |
| WT 20/21 | 2550132 | Seminar zur Mathematischen Optimierung (MA) | 2 SWS | Seminar | Stein, Neumann |
| WT 20/21 | 2550473 | Seminar on Power Systems Optimization (Master) | 2 SWS | Seminar /  | Rebennack, Warwicker |
| WT 20/21 | 2550491 | Seminar: Modern OR and Innovative Logistics | 2 SWS | Seminar /  | Nickel, Mitarbeiter |
| ST 2021 | 2550132 | Seminar zur Mathematischen Optimierung (MA) | 2 SWS | Seminar /  | Stein, Beck, Neumann, Schwarze |
| ST 2021 | 2550473 | Seminar on Power Systems Optimization (Master) | 2 SWS | Seminar /  | Rebennack, Warwicker, Sinske |
| ST 2021 | 2550491 | Seminar: Modern OR and Innovative Logistics | 2 SWS | Seminar /  | Nickel, Mitarbeiter |
| Exams | | | | | |
| WT 20/21 | 7900011_WS2021 | Seminar in Operations Research B (Bachelor) | | | Stein |
| WT 20/21 | 7900012_WS2021 | Seminar in Operations Research A (Master) | | | Stein |
| WT 20/21 | 7900108 | Seminar: Modern OR and Innovative Logistics | | | Nickel |
| WT 20/21 | 7900282 | Digitization in the Steel Industry | | | Nickel |
| WT 20/21 | 7900286 | Digitization in the Steel Industry | | | Nickel |
| WT 20/21 | 7900314 | Seminar in Operations Research A (Master) | | | Rebennack |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites

None.

Recommendation


See seminar description in the course catalogue of the KIT (<https://campus.kit.edu/>)

Annotation

The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: <https://portal.wiwi.kit.edu>.

Below you will find excerpts from events related to this course:

| | | |
|---|---|-------------------------------|
|  | Seminar on Methodical Foundations of Operations Research 2550131, WS 20/21, 2 SWS, Language: German, Open in study portal | Seminar (S) Online |
|---|---|-------------------------------|

Content

The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor students are introduced to the style of scientific work. By focused treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientific reasoning. Also rhetoric abilities may be improved.

Remarks:

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

Assessment:

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation. The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

Workload:

The total workload for this course is approximately 90 hours. For further information see German version.


Organizational issues

Blockveranstaltung, Termin n. V.

Literature

Die Literatur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbereitung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a preparatory meeting.

| | | |
|---|--|-------------------------------|
|  | Seminar: Modern OR and Innovative Logistics 2550491, WS 20/21, 2 SWS, Language: German, Open in study portal | Seminar (S) Online |
|---|--|-------------------------------|

Content


The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

Organizational issues

wird auf der Homepage bekannt gegeben

Literature

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

| | | |
|---|---|-------------------------------|
|  | Seminar: Modern OR and Innovative Logistics 2550491, SS 2021, 2 SWS, Language: German, Open in study portal | Seminar (S) Online |
|---|---|-------------------------------|

Content

The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

The topics of the seminar will be announced at the beginning of the term in a preliminary meeting. Attendance is compulsory for the preliminary meeting as well for all seminar presentations.

Exam:

The assessment consists of a written seminar thesis of 20-25 pages and a presentation of 35-40 minutes (according to §4(2), 3 of the examination regulation).

The final mark for the seminar consists of the seminar thesis, the seminar presentation, the handout, and if applicable further material such as programming code.

The seminar can be attended both by Bachelor and Master students. A differentiation will be achieved by different valuation standards for the seminar thesis and presentation.

Requirements:

If possible, at least one module of the institute should be taken before attending the seminar.

Objectives:

The student

- illustrates and evaluates classic and current research questions in discrete optimization,
- applies optimization models and algorithms in discrete optimization, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management),
- successfully gets in touch with scientific working by an in-depth working on a special scientific topic which makes the student familiar with scientific literature research and argumentation methods,
- acquires good rhetorical and presentation skills.

As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic.

Organizational issues

wird auf der Homepage dol.ior.kit.edu bzw. auf dem WiWi-Portal bekannt gegeben

Literature

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

T

5.269 Course: Seminar in Statistics A (Master) [T-WIWI-103483]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-102736 - Seminar Module Economic Sciences](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|----------|---------|--|-------|-----------|--------------------------------------|
| WT 20/21 | 2521310 | Topics in Econometrics | 2 SWS | Seminar / | Schienle, Chen, Görden, Krüger, Buse |
| ST 2021 | 2500004 | Introduction to Statistical Machine Learning | 2 SWS | Seminar / | Schienle, Lerch |
| ST 2021 | 2521310 | Advanced Topics in Econometrics | 2 SWS | Seminar / | Schienle, Krüger, Görden, Koster |
| Exams | | | | | |
| WT 20/21 | 7900254 | Topics in Econometrics. Seminar in Economics | | | Schienle |
| ST 2021 | 7900033 | Introduction to Statistical Machine Learning | | | 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:

V

Topics in Econometrics

2521310, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Organizational issues

Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

V

Introduction to Statistical Machine Learning

2500004, SS 2021, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben



Advanced Topics in Econometrics

2521310, SS 2021, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

**5.270 Course: Seminar Informatics A [T-INFO-104336]**

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: [M-INFO-102822 - Seminar Module Informatics](#)

| Type | Credits | Grading scale | Version |
|-----------------------------|---------|------------------|---------|
| Examination of another type | 3 | Grade to a third | 1 |

| Events | | | | | |
|----------|----------|--|-------|-----------|----------------------------|
| WT 20/21 | 2400072 | Seminar: Service-oriented Architectures | | Seminar / | Abeck, Schneider |
| WT 20/21 | 2400078 | Seminar: Neuronale Netze und künstliche Intelligenz | | Seminar / | Waibel, Stüker, Asfour, HA |
| WT 20/21 | 24844 | Seminar: Ubiquitous Systems | 2 SWS | Seminar / | Beigl, Pescara |
| ST 2021 | 2400011 | Hot Topics in Bioinformatics | 2 SWS | Seminar / | Stamatakis |
| ST 2021 | 2400072 | Seminar: Service-oriented Architectures | | Seminar / | Abeck, Schneider |
| ST 2021 | 2400144 | Can Statistics Prove Cause and Effect? | 2 SWS | Seminar / | Janzing |
| ST 2021 | 24344 | Advanced Methods of Information Fusion | 2 SWS | Seminar / | Hanebeck, Radtke |
| Exams | | | | | |
| WT 20/21 | 7500021 | Advanced Methods of Information Fusion | | | Hanebeck |
| WT 20/21 | 7500122 | CES - Seminar: Machine Learning | | | Henkel |
| WT 20/21 | 7500175 | Seminar: Energy Informatics | | | Wagner |
| WT 20/21 | 7500220 | Seminar Ubiquitous Computing | | | Beigl |
| WT 20/21 | 7500257 | Seminar Big Data Tools | | | Streit |
| WT 20/21 | 7500267 | Seminar Advanced Topics in Machine Translation | | | Waibel |
| WT 20/21 | 75104740 | Seminar: Service-Oriented Architectures | | | Abeck |
| ST 2021 | 7500013 | Advanced Methods of Information Fusion | | | Hanebeck, Noack |
| ST 2021 | 7500014 | Seminar: Hot Topics in Bioinformatics | | | Stamatakis |
| ST 2021 | 7500148 | Proseminar: Practical Seminar: Interactive Analytics | | | Beigl, Mädche |
| ST 2021 | 7500162 | Seminar: Ubiquitous Systems | | | Beigl, Riedel |
| ST 2021 | 75104740 | Seminar: Service-Oriented Architectures | | | Abeck |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Below you will find excerpts from events related to this course:

**Seminar: Neuronale Netze und künstliche Intelligenz**

2400078, WS 20/21, SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)
Online**

Content

In many tasks that appear natural to us, the fastest computers are unable to match the performance of the human brain. Neural networks attempt to simulate the parallel and distributed architecture of the brain in order to master these skills with learning algorithms. In this context, focus is being put on neural network approaches to computer vision and speech recognition, robotics and other areas.

In this seminar students will acquaint themselves with literature from provided topics and will present their results as a talk supported by slides to the other participants of the seminar.

Recommendations:

- Finishing the module "Kognitive Systeme" prior to the seminar is recommended.
- Attending the lecture "Deep Learning und Neuronale Netze" prior to the seminar is of advantage

Organizational issues

Die Anmeldung zum Seminar erfolgt über die Anmeldung zur Veranstaltung im Campus-System.

**Hot Topics in Bioinformatics**

2400011, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)
Online

Content

Prerequisites: CS Master's level seminar. Participants must have attended and passed the course on "Introduction to Bioinformatics for Computer Scientists" in one of the preceding winter terms.

Task: You will need to select papers to present, give a presentation and write a report.

This main seminar allows students to understand and present the contents of current papers in Bioinformatics such as published for instance in the journals *Bioinformatics*, *BMC Bioinformatics*, *Journal of Computational Biology* etc. or at conferences such as *ISMB* or *RECOMB*.

We will provide a list of interesting papers, but students can also propose papers they are interested in. Students may also choose to cover broader topics of more general interest such as multiple sequence alignment, Bayesian phylogenetic inference, read assembly etc.

Each student will be assigned a lab member for help with understanding the article and preparing the slides as well as the report.

Students should give a 35 minute presentation on their topic of choice and write a report (Seminararbeit) comprising 8 pages.

Goals: Participants are able to understand, critically assess, and compare current research papers in Bioinformatics. They are able to present algorithms and models from current research papers in oral and written form at a level that corresponds to that of scientific publications and conference presentations. Participants are able to suggest extension to current methods.

Credits: 3 ECTS

Organizational issues

IMPORTANT: Register for the seminar mailing list by sending an email to Alexandros.Stamatakis@h-its.org.

All information on the seminar is provided at: [Seminar page](#) Information about how we will start virtually is also provided there. We will start in the first week of the summer term. For all further information, students are requested to regularly read their emails.

**Advanced Methods of Information Fusion**

24344, SS 2021, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)
Online

Content

The growing spread and performance of modern information and communication technologies produces an ever-increasing amount of data. It is one of the central challenges of our time to extract meaningful information from these data sets. The approach to address these issues, often called data science, combines strategies and methods from the fields of machine learning, mathematics, state estimation, visualization and pattern recognition. During this seminar, the students will familiarize themselves with concepts and methods particularly focusing on estimation theory and its application.

The seminar targets master students in computer science and bachelor students in Information engineering and management.





T





5.271 Course: Seminar Informatics Master [T-INFO-111205]

Organisation: KIT Department of Informatics

Part of: [M-INFO-102822 - Seminar Module Informatics](#)

| Type | Credits | Grading scale | Version |
|-----------------------------|---------|------------------|---------|
| Examination of another type | 3 | Grade to a third | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|-------------------------------------|
| WT 20/21 | 2400060 | Data in Software-Intensive Technical Systems - Modeling - Analysis - Protection | 2 SWS | Seminar /  | Reussner, Raabe, Müller-Quade |
| ST 2021 | 2400033 | Research Focus Class: Blockchain & Payment Channel Networks Seminar | 2 SWS | Seminar /  | Hartenstein, Grundmann |
| ST 2021 | 2400084 | Seminar: Robot Reinforcement Learning | 2 SWS | Seminar /  | Neumann |
| ST 2021 | 5012005 | Language Models | | Advanced Graduate Seminar (/  | Seidel-Saul, Betz, Koziolk |
| Exams | | | | | |
| WT 20/21 | 7500232 | Seminar Data in Software-Intensive Technical Systems - Modeling - Analysis - Protection | | | Reussner |
| ST 2021 | 7400490 | Language Models | | | Betz, Seidel-Saul, Gutmann, Koziolk |


Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.272 Course: Seminar Methods along the Innovation process [T-WIWI-110987]

Responsible: Dr. Daniela Beyer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|--------------------|
| WT 20/21 | 2545111 | Methoden entlang des Innovationsprozesses | 2 SWS | Seminar /  | Beyer |
| Exams | | | | | |
| WT 20/21 | 7900310 | Methods along the Innovation process | | | Weissenberger-Eibl |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Alternative exam assessment.

Recommendation

Prior attendance of the course Innovation Management [2545015] is recommended.

T

5.273 Course: Seminar: Computer Science TECO [T-INFO-110808]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: [M-INFO-105328 - Seminar: Computer Science TECO](#)


| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Each term | 2 |

T

5.274 Course: Seminar: Governance, Risk & Compliance [T-INFO-102047]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [M-INFO-101242 - Governance, Risk & Compliance](#)

| Type | Credits | Grading scale | Version |
|-----------------------------|---------|------------------|---------|
| Examination of another type | 3 | Grade to a third | 1 |

| Events | | | | | |
|---------|---------|---|-------|---|-------------------------------|
| ST 2021 | 2400041 | Governance, Risk & Compliance | 2 SWS | Seminar /  | Herzig |
| Exams | | | | | |
| ST 2021 | 7500140 | Seminar: Legal Studies I | | | Dreier, Boehm, Melullis, Matz |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**5.275 Course: Seminar: Legal Studies I [T-INFO-101997]**

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-INFO-101218 - Seminar Module Law

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|----------|---------|---|-------|-----------|--|
| WT 20/21 | 2400060 | Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection | 2 SWS | Seminar / | Reussner, Raabe, Müller-Quade |
| WT 20/21 | 2400133 | Hate speech & Fake news – Das öffentliche Recht in der „postrationalen Konstellation“? | 2 SWS | Seminar / | Eichenhofer |
| WT 20/21 | 2400240 | Grundfragen Ethik und IT | 2 SWS | Seminar / | Dreier |
| WT 20/21 | 24389 | IT-Sicherheit und Recht | 2 SWS | Seminar / | Schallbruch |
| WT 20/21 | 2513214 | Seminar Information security and data protection (Bachelor) | 2 SWS | Seminar / | Oberweis, Volkamer, Raabe, Alpers, Düzgün, Schiefer, Wagner |
| ST 2021 | 2400041 | Governance, Risk & Compliance | 2 SWS | Seminar / | Herzig |
| ST 2021 | 2400061 | Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung | 2 SWS | Seminar / | Bless, Boehm, Hartenstein, Mädche, Sunyaev, Zitterbart, Volkamer |
| ST 2021 | 2400065 | "Die Corona-Krise aus der Sicht des Verfassungsrechts" | 2 SWS | Seminar / | Eichenhofer |
| ST 2021 | 2400082 | "Verfassungsrechtliche Fragen staatlicher Öffentlichkeitsarbeit" | 2 SWS | Seminar / | Eichenhofer |
| ST 2021 | 2400127 | Aktuelle Probleme des Datenschutzrechts | | Seminar / | Eichenhofer |
| ST 2021 | 2400153 | Technische Aspekte der DSGVO und deren Umsetzung in der Praxis | 2 SWS | Seminar / | Boehm, Dimitrova |
| ST 2021 | 24820 | Current Issues in Patent Law | 2 SWS | Seminar / | Melullis |
| Exams | | | | | |
| WT 20/21 | 7500035 | Seminar: Legal Studies II | | | Eichenhofer |
| WT 20/21 | 7500182 | Seminar: Legal Studies II | | | Dreier, Boehm, Raabe |
| WT 20/21 | 7500232 | Seminar Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection | | | Reussner |
| ST 2021 | 7500140 | Seminar: Legal Studies I | | | Dreier, Boehm, Melullis, Matz |
| ST 2021 | 7500159 | Seminar: Legal Studies I | | | Eichenhofer |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Below you will find excerpts from events related to this course:

**Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung**

2400061, SS 2021, 2 SWS, [Open in study portal](#)

Seminar (S)
Online

Content

- Registration via <https://portal.wiwi.kit.edu/ys/4516>

Organizational issues
nach Vereinbarung

T

5.276 Course: Service Design Thinking [T-WIWI-102849]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101503 - Service Design Thinking](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 12 | Grade to a third | Irregular | 4 |

Competence Certificate

Alternative exam assessment.

Prerequisites

None

Recommendation

This course is held in English – proficiency in writing and communication is required.

Our past students recommend to take this course at the beginning of the masters program.

Annotation

Due to practical project work as a component of the program, access is limited.

The module (as well as the module component) spans two semesters. It starts in September every year and runs until end of June in the subsequent year. Entering the program is only possible at its beginning - after prior application in May/June.

For more information on the application process and the program itself are provided in the module component description and the program's website (<http://sdt-karlsruhe.de>).

Furthermore, the KSRI conducts an information event for applicants every year in May.


This module is part of the KSRI Teaching Program „Digital Service Systems“. For more information see the KSRI Teaching website: www.ksri.kit.edu/teaching.





T

5.277 Course: Service Innovation [T-WIWI-102641]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101410 - Business & Service Engineering](#)
[M-WIWI-101448 - Service Management](#)
[M-WIWI-102806 - Service Innovation, Design & Engineering](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|---------|
| ST 2021 | 2595468 | Service Innovation | 2 SWS | Lecture /  | Satzger |
| Exams | | | | | |
| WT 20/21 | 7900208 | Service Innovation (Nachklausur am 03.12.2020) | | | Satzger |
| WT 20/21 | 7900334 | Service Innovation | | | Satzger |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment consists of a written exam (60 min.). A bonus can be acquired through successful participation in the exercise. If the grade of the written exam is between 4.0 and 1.3, the bonus improves the grade by one grade (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites

None

Recommendation

None

Below you will find excerpts from events related to this course:

V

Service Innovation2595468, SS 2021, 2 SWS, Language: English, [Open in study portal](#)**Lecture (V)
Online****Content**

Continuous innovation is a prerequisite for firms to stay competitive. While innovation in manufacturing or agriculture can build on a considerable body of research, experience and best practices, innovation in services has not reached the same level of maturity.

This course takes a close look at the topic of service innovation. We will lay the foundations with an initial overview of service innovation including the basic concepts, challenges and innovation processes. We will compare product and service innovation and understand how innovation diffusion works.

The second part focuses on applicable methods and tools for service innovation: we will cover possible sources of innovations, ways to identify opportunities for innovations and the potential of service innovations built on data. For example, open and closed innovation approaches will be contrasted, the benefits of leveraging user communities to drive innovation will be explored and the human-centric innovation approach (Service) Design Thinking will be introduced. We will also look into the opportunities that technology offers for service innovation.

The last part of the lecture covers the management of service innovation and insights from practice. You will understand obstacles and enablers, and learn how to manage, incentivize and foster service innovation.

Literature


- Cardoso, J., Fromm, H., Nickel, S., Satzger, G., Studer, R., & Weinhardt, C. (Eds.) (2015). Fundamentals of service systems (Vol. 12). Heidelberg: Springer.
- Lusch, R. F., & Nambisan, S. (2015). Service innovation: A service-dominant logic perspective. *MIS quarterly*, 39(1), 155-175.
- Christensen, Clayton M. (2013). *The Innovator's Dilemma - when new technologies cause great firms to fail*. Boston, Massachusetts: Harvard Business Review Press.
- Rogers, S. (2003). *Diffusion of Innovations*. 5. ed. New York: Free Press.
- Chesbrough, H. W. (2011). *Open services innovation - rethinking your business to grow and compete in a new era*. 1. ed. San Francisco: Jossey-Bass.
- Chesbrough, H. (2011). *Open services innovation: Rethinking your business to grow and compete in a new era*. John Wiley & Sons.
- Uebernickel, F., Brenner, W., Pukall, B., Naef, T., & Schindlholzer, B. (2015). *Design Thinking: Das Handbuch*. Frankfurt am Main: Frankfurter Allgemeine Buch.
- Runco, M.A. (2014). *Creativity: Theories and Themes: Research, Development, and Practice* (2nd ed.). Amsterdam: Academic Press.





T

5.278 Course: Signals and Codes [T-INFO-101360]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: [M-INFO-101198 - Advanced Topics in Cryptography](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------|---------|
| Oral examination | 3 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|----------|---------|-----------------------------------|-------|---|-------------------------|
| WT 20/21 | 24137 | Signals and Codes | 2 SWS | Lecture /  | Geiselman, Müller-Quade |
| Exams | | | | | |
| WT 20/21 | 7500090 | Signals and Codes | | | Geiselman, Müller-Quade |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Below you will find excerpts from events related to this course:

V

Signals and Codes

24137, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

In this lecture, bounds for codes (Hamming, Gilbert-Varshamov, Singleton) are presented. Coding and decoding for classical algebraic codes (linear, cyclic, Reed Solomon-, Goppa- und Reed Muller-codes) will be presented as well as concatenated codes.

Literature

Shu Lin, Daniel Costello, 'Error Control Coding', 2nd Ed., Pearson Prentice Hall, 2004
 Todd Moon, 'Error Correction Coding', Wiley, 2005
 Weitere Literatur wird in der Vorlesung bekannt gegeben.

Weiterführende Literatur

Wird in der Vorlesung bekannt gegeben.





T

5.279 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 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|---|-------|---|---------------------|
| ST 2021 | 2581025 | Simulation Game in Energy Economics | 3 SWS | Lecture / Practice (/ ) | Genoese, Zimmermann |

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

See German version.

Below you will find excerpts from events related to this course:

V

Simulation Game in Energy Economics

2581025, SS 2021, 3 SWS, Language: German, [Open in study portal](#)

Lecture / Practice (VÜ)
Online

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


5.280 Course: Smart Energy Infrastructure [T-WIWI-107464]



Responsible: Dr. Armin Ardone
Dr. Dr. Andrej Marko Pustisek

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101452 - Energy Economics and Technology](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|------------------|
| WT 20/21 | 2581023 | (Smart) Energy Infrastructure | 2 SWS | Lecture /  | Ardone, Pustisek |
| Exams | | | | | |
| WT 20/21 | 7981023 | Smart Energy Infrastructure | | | 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.

Annotation

New course starting winter term 2017/2018.

Below you will find excerpts from events related to this course:

V

(Smart) Energy Infrastructure

2581023, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content



- Basic terms and concepts
- Meaning of infrastructure
- Excursus: regulation of infrastructure
- Natural gas transportation
- Natural gas storage
- Electricity transmission
- (Overview) Crude oil and oil product transportation





T

5.281 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 | Each winter term | 2 |

| Events | | | | | |
|----------|---------|--|-------|--|-----------|
| WT 20/21 | 2540452 | Smart Grid Applications | 2 SWS | Lecture /  | Staudt |
| WT 20/21 | 2540453 | Übung zu Smart Grid Applications | 1 SWS | Practice /  | Staudt |
| Exams | | | | | |
| WT 20/21 | 7900235 | Smart Grid Applications | | | Weinhardt |
| WT 20/21 | 7900308 | Smart Grid Applications | | | 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

The lecture will be read for the first time in winter term 2018/19.

T

5.282 Course: Social Choice Theory [T-WIWI-102859]

Responsible: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101500 - Microeconomic Theory](#)
[M-WIWI-101504 - Collective Decision Making](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---------|---------|---|-------|------------|--------------|
| ST 2021 | 2520537 | Social Choice Theory | 2 SWS | Lecture / | Puppe, Kretz |
| ST 2021 | 2520539 | Übung zu Social Choice Theory | 1 SWS | Practice / | Kretz, Puppe |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

The assessment consists of an alternative exam assessment (open book exam). The exam takes place in every summer semester.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Social Choice Theory

2520537, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

How should (political) candidates be elected? What are good ways of merging individual judgments into collective judgments? Social Choice Theory is the systematic study and comparison of how groups and societies can come to collective decisions.

The course offers a rigorous and comprehensive treatment of judgment and preference aggregation as well as voting theory. It is divided into two parts. The first part deals with (general binary) aggregation theory and builds towards a general impossibility result that has the famous Arrow theorem as a corollary. The second part treats voting theory. Among other things, it includes proving the Gibbard-Satterthwaite theorem.

Literature

Main texts:

- Hervé Moulin: Axioms of Cooperative Decision Making, Cambridge University Press, 1988
- Christian List and Clemens Puppe: Judgement Aggregation. A survey, in: Handbook of rational & social choice, P.Anand,P.Pattanaik, C.Puppe (Eds.), Oxford University Press 2009.

Secondary texts:





- Amartya Sen: Collective Choice and Social Welfare, Holden-Day, 1970
- Wulf Gaertner: A Primer in Social Choice Theory, revised edition, Oxford University Press, 2009
- Wulf Gaertner: Domain Conditions in Social Choice Theory, Oxford University Press, 2001





T

5.283 Course: Sociotechnical Information Systems Development [T-WIWI-109249]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104403 - Critical Digital Infrastructures](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 4,5 | Grade to a third | Each term | 2 |

| Events | | | | | |
|----------|---------|--|-------|--|----------------|
| WT 20/21 | 2512400 | Practical Course Sociotechnical Information Systems Development (Bachelor) | 3 SWS | Practical course /  | Sunyaev, Pandl |
| WT 20/21 | 2512401 | Practical Course Sociotechnical Information Systems Development (Master) | 3 SWS | Practical course /  | Sunyaev, Pandl |
| ST 2021 | 2512400 | Advanced Lab Development of Sociotechnical Information Systems (Bachelor) | 3 SWS | Practical course /  | Sunyaev, Pandl |
| ST 2021 | 2512401 | Development of Sociotechnical Information Systems (Master) | 3 SWS | Practical course /  | Sunyaev, Pandl |
| Exams | | | | | |
| WT 20/21 | 7900115 | Advanced Lab Development of Sociotechnical Information Systems (Bachelor) | | | Sunyaev |
| WT 20/21 | 7900143 | Advanced Lab Development of Sociotechnical Information Systems (Master) | | | Sunyaev |
| ST 2021 | 7900173 | Advanced Lab Development of Sociotechnical Information Systems (Master) | | | 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

Practical Course Sociotechnical Information Systems Development (Bachelor) Practical course (P)
 2512400, WS 20/21, 3 SWS, Language: German/English, [Open in study portal](#) Online

Content

The aim of this course is to provide a practical introduction into developing socio-technical information systems, such as web platforms, mobile apps, or desktop applications. Course participants will create (individually or in groups) software solutions for specific problems from various practical domains. The course tasks comprise requirements assessment, system design, and software implementation. Furthermore, course participants will gain insights into software quality assurance methods and software documentation.

Learning objectives:

- Independent and self-organized realization of a software development project
- Evaluation and selection of suitable development tools and methods
- Application of modern software development methods
- Planning and execution of different development tasks: requirements assessment, system design, implementation, and quality assurance
- Project documentation
- Presentation of project results in an comprehensible and structured form

**Practical Course Sociotechnical Information Systems Development (Master)**

2512401, WS 20/21, 3 SWS, Language: German/English, [Open in study portal](#)

**Practical course (P)
Online**

Content

The aim of this course is to provide a practical introduction into developing socio-technical information systems, such as web platforms, mobile apps, or desktop applications. Course participants will create (individually or in groups) software solutions for specific problems from various practical domains. The course tasks comprise requirements assessment, system design, and software implementation. Furthermore, course participants will gain insights into software quality assurance methods and software documentation.

Learning objectives:

- Independent and self-organized realization of a software development project
- Evaluation and selection of suitable development tools and methods
- Application of modern software development methods
- Planning and execution of different development tasks: requirements assessment, system design, implementation, and quality assurance
- Project documentation
- Presentation of project results in an comprehensible and structured form

**Advanced Lab Development of Sociotechnical Information Systems (Bachelor)**

2512400, SS 2021, 3 SWS, Language: German/English, [Open in study portal](#)

**Practical course (P)
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.

**Development of Sociotechnical Information Systems (Master)**

2512401, SS 2021, 3 SWS, Language: German/English, [Open in study portal](#)

**Practical course (P)
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.





T

5.284 Course: Software Architecture and Quality [T-INFO-101381]

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: [M-INFO-101201 - Software Systems](#)
[M-INFO-101202 - Software Methods](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|----------|
| ST 2021 | 24667 | Software Architecture and Quality | 2 SWS | Lecture /  | Reussner |
| Exams | | | | | |
| WT 20/21 | 7500032 | Software Architecture and Quality | | | Reussner |
| ST 2021 | 7500021 | Software Architecture and Quality | | | Reussner |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.285 Course: Software Quality Management [T-WIWI-102895]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101477 - Development of Business Information Systems](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|----------|---------|---|-------|--------------|-------------------|
| ST 2021 | 2511208 | Software Quality Management | 2 SWS | Lecture / 📱 | Oberweis |
| ST 2021 | 2511209 | Übungen zu Software-Qualitätsmanagement | 1 SWS | Practice / 📱 | Oberweis, Frister |
| Exams | | | | | |
| WT 20/21 | 7900027 | Software Quality Management (Registration until 08 February 2021) | | | Oberweis |
| ST 2021 | 7900031 | Software Quality Management (Registration until 12 July 2021) | | | Oberweis |

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Software Quality Management

2511208, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

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 mail models of software certification, compare and evaluate these models,
- write scientific theses in the area of software quality management and find own solutions for given problems.

Recommendations:

Programming knowledge in Java and basic knowledge of computer science are expected.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

Literature

- Helmut Balzert: Lehrbuch der Software-Technik. Spektrum-Verlag 2008
- Peter Liggesmeyer: Software-Qualität, Testen, Analysieren und Verifizieren von Software. Spektrum Akademischer Verlag 2002
- Mauro Pezzè, Michal Young: Software testen und analysieren. Oldenbourg Verlag 2009


Weitere Literatur wird in der Vorlesung bekanntgegeben.


T

5.286 Course: Software-Evolution [T-INFO-101256]

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: [M-INFO-101201 - Software Systems](#)
[M-INFO-101202 - Software Methods](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|------------------------------------|-------|---|----------|
| WT 20/21 | 24164 | Software Evolution | 2 SWS | Lecture /  | Heinrich |
| Exams | | | | | |
| WT 20/21 | 7500004 | Software-Evolution | | | Reussner |
| ST 2021 | 7500023 | Software-Evolution | | | Reussner |



Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled





T

5.287 Course: Spatial Economics [T-WIWI-103107]

Responsible: Prof. Dr. Ingrid Ott**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-101485 - Transport Infrastructure Policy and Regional Development](#)
[M-WIWI-101496 - Growth and Agglomeration](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|-----------------------------------|-------|--|-----------|
| WT 20/21 | 2561260 | Spatial Economics | 2 SWS | Lecture /  | Ott |
| WT 20/21 | 2561261 | | 1 SWS | Practice /  | Ott, Bälz |
| Exams | | | | | |
| WT 20/21 | 7900075 | Spatial Economics | | | Ott |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled**Competence Certificate**

Depending on further pandemic developments, the examination will be offered in the summer semester 2021 either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites

None

Recommendation

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses "Economics I" [2600012], and "Economics II" [2600014]. In addition, an interest in quantitative-mathematical modeling is required. The attendance of the course "Introduction to economic policy" [2560280] is recommended.

Annotation

Due to the research semester of Prof. Dr. Ingrid Ott, the course is not offered in the winter term 2018/19.

Below you will find excerpts from events related to this course:

V

Spatial Economics2561260, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)**Lecture (V)**
Online

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

5.288 Course: Special Topics in Information Systems [T-WIWI-109940]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101410 - Business & Service Engineering](#)
[M-WIWI-101506 - Service Analytics](#)
[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 | 2 |

| Exams | | | |
|----------|---------|---|-----------|
| WT 20/21 | 7900263 | Special Topics in Information Systems | Weinhardt |

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class.

Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class).

Prerequisites

see below

Recommendation

None

Annotation

All the practical seminars offered at the chair of Prof. Dr. Weinhardt can be chosen in the Special Topics in Information Systems course. The current topics of the practical seminars are available at the following homepage: www.iism.kit.edu/im/lehre.

The Special Topics Information Systems is equivalent to the practical seminar, as it was only offered for the major in "Information 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

5.289 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](#)


Type
Written examination





Credits
4,5

Grading scale
Grade to a third

Recurrence
Each winter term

Version
1

| Events | | | | | |
|----------|---------|---|-------|---|--------|
| WT 20/21 | 2521350 | Statistical Modeling of Generalized Regression Models | 2 SWS | Lecture /  | Heller |
| Exams | | | | | |
| WT 20/21 | 7900146 | Statistical Modeling of generalized regression models | | | Heller |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation.

Prerequisites

None

Recommendation

Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics" [2520016]

Below you will find excerpts from events related to this course:

V

Statistical Modeling of Generalized Regression Models

2521350, WS 20/21, 2 SWS, [Open in study portal](#)

Lecture (V)
On-Site

Content

Learning objectives:

The student has profound knowledge of generalized regression models.

Requirements:

Knowledge of the contents covered by the course *Economics III: Introduction in Econometrics* [2520016].

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours


Preparation and follow-up: 65 hours



T

5.290 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 20/21 | 2521331 | Stochastic Calculus and Finance | 2 SWS | Lecture /  | Safarian |
| Exams | | | | | |
| WT 20/21 | 7900225 | Stochastic Calculus and Finance | | | Safarian |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

The assessment of this course consists of a written examination (§4(2), 1 SPOs, 180 min.).

Prerequisites

None

Annotation

For more information see <http://statistik.econ.kit.edu/>

Below you will find excerpts from events related to this course:

V

Stochastic Calculus and Finance

2521331, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Blended (On-Site/Online)

Content**Learning objectives:**

After successful completion of the course students will be familiar with many common methods of pricing and portfolio models in finance. Emphasis 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

5.291 Course: Strategic Finance and Technoloy Change [T-WIWI-110511]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 1,5 | Grade to a third | Each summer term | 1 |

| Exams | | | |
|----------|---------|--|--------|
| WT 20/21 | 7900219 | Strategic Finance and Technoloy Change | Ruckes |

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. The exam is offered each semester. If there are only a small number of participants registered for the exam, we reserve the right to hold an oral examination instead of a written one.

Prerequisites

None

Recommendation


Attending the lecture "Financial Management" is strongly recommended.



T

5.292 Course: Strategic Foresight China [T-WIWI-110986]

Responsible: Prof. Dr. Marion Weissenberger-Eibl
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|--------------------|
| WT 20/21 | 2545110 | Strategische Vorausschau am Praxisbeispiel China | 2 SWS | Seminar /  | Heine |
| Exams | | | | | |
| WT 20/21 | 7900307 | Strategic Foresight China | | | Weissenberger-Eibl |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Alternative exam assessment.

Recommendation

Prior attendance of the course Innovation Management [2545015] is recommended.

T

5.293 Course: Strategic Management of Information Technology [T-WIWI-102669]

Responsible: Prof. Dr. Thomas Wolf
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101477 - Development of Business Information Systems](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

Competence Certificate

Please note that the exam for first writers will be offered for the last time in winter semester 2019/2020. A last examination possibility exists in the summer semester 2020 (only for repeaters).

The assessment of this course is a written (60 min.) or (if necessary) oral examination according (30 min.) to §4(2) of the examination regulation.

Prerequisites

None

T

5.294 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 2021 | 2577921 | Strategy and Management Theory: Developments and "Classics" (Master) | 2 SWS | Seminar / | Lindstädt |
| Exams | | | | | |
| ST 2021 | 7900126 | Strategy and Management Theory: Developments and "Classics" | | | 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 2021, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

In this lecture, students discuss and evaluate models in the field of strategic management with a focus on applicability and theory based limitations. Critical examination of current research results will be a substantial part of this course.

Learning Objectives:

Students

- are able to explain and evaluate theoretical approaches and models in the field of strategic management and can illustrate them by tangible examples
- learn to express their position in structured discussions

Recommendations:

Basic knowledge as conveyed in the bachelor module "Strategy and Organization" is recommended.

Workload:

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

Assessment:

The control of success according to § 4(2), 3 SPO takes place by writing a scientific work and a presentation of the results of the work in the context of a final meeting. Details on the design of the success control will be announced during the lecture.

Note:

This course is admission restricted. If you were already admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed. Further information on the application process can be found on the IBU website.

The examinations are offered at least every second semester, so that the entire module can be completed in two semesters.

Organizational issues

siehe Homepage

T

5.295 Course: Subdivision Algorithms [T-INFO-103550]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101864 - Subdivision Algorithms](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------|---------|
| Oral examination | 5 | Grade to a third | Irregular | 1 |

T

5.296 Course: Supplement Enterprise Information Systems [T-WIWI-110346]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101477 - Development of Business Information Systems](#)

| Type | Credits | 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 examination (60 min.) or (if necessary) oral examination (30 min.) according to §4(2) of the examination regulation.

Prerequisites

None

T

5.297 Course: Supply Chain Management in the Automotive Industry [T-WIWI-102828]

Responsible: Tilman Heupel
Hendrik Lang

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101412 - Industrial Production III](#)
[M-WIWI-101471 - Industrial Production II](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|--|-------|-----------|--------------|
| WT 20/21 | 2581957 | Supply Chain Management in the automotive industry | 2 SWS | Lecture / | Lang, Heupel |
| Exams | | | | | |
| WT 20/21 | 7981957 | Supply Chain Management in the Automotive Industry | | | 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

Supply Chain Management in the automotive industry

2581957, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

- Automotive industry significance
- The automotive supply chain
- Adding value structures of the automotive supply chain and mastering of the production systems as factors of success in the SCM
- Strategic procurement logistics
- Risk management
- Quality engineering and management in the automotive supply chain
- Cost engineering and management in the automotive supply chain
- Purchasing (Supplier selection, contract management)
- Performance measurement of the supply chain
- Organization

Literature

Wird in der Veranstaltung bekannt gegeben.

T

5.298 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 2021 | 2581961 | Supply Chain Management with Advanced Planning Systems | 2 SWS | Lecture / | Göbelt, Bosch |
| Exams | | | | | |
| WT 20/21 | 7981961 | Supply Chain Management with Advanced Planning Systems | | | 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 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

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

5.299 Course: Symmetric Encryption [T-INFO-101390]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: [M-INFO-101198 - Advanced Topics in Cryptography](#)
[M-INFO-101207 - Networking Security - Theory and Praxis](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|--------------------------------------|-------|---|--------------------------|
| ST 2021 | 24629 | Symmetric encryption | 2 SWS | Lecture /  | Müller-Quade, Geiselmann |
| Exams | | | | | |
| WT 20/21 | 7500178 | Symmetric Encryption | | | Geiselmann, Müller-Quade |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Es wird empfohlen, das Modul Sicherheit zu belegen.

Below you will find excerpts from events related to this course:

V

Symmetric encryption

24629, SS 2021, 2 SWS, Language: German, [Open in study portal](#)


Lecture (V)
Online




T

5.300 Course: Tax Law I [T-INFO-101315]

Responsible: Detlef Dietrich
Organisation: KIT Department of Informatics
Part of: [M-INFO-101216 - Private Business Law](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|---------------------------|-------|---|--------------|
| WT 20/21 | 24168 | Tax Law I | 2 SWS | Lecture /  | Dietrich |
| Exams | | | | | |
| WT 20/21 | 7500066 | Tax Law I | | | Dreier, Matz |


Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled





T

5.301 Course: Tax Law II [T-INFO-101314]

Responsible: Detlef Dietrich
Organisation: KIT Department of Informatics
Part of: [M-INFO-101216 - Private Business Law](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|----------------------------|-------|---|--------------|
| ST 2021 | 24646 | Tax Law II | 2 SWS | Lecture /  | Dietrich |
| Exams | | | | | |
| WT 20/21 | 7500067 | Tax Law II | | | Dreier, Matz |


Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled





T

5.302 Course: Technologies for Innovation Management [T-WIWI-102854]

Responsible: Dr. Daniel Jeffrey Koch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------------|---------|
| Examination of another type | 3 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|----------|---------|--|--------------------|---|------|
| WT 20/21 | 2545106 | Technologies for Innovation Management | 2 SWS | Seminar /  | Koch |
| Exams | | | | | |
| WT 20/21 | 7900239 | Technologies for Innovation Management | Weissenberger-Eibl | | |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Competence Certificate

Presentation and individual paper (ca. 15 pages) as alternative exam assessment.

Prerequisites

None

Recommendation

Prior attendance of the course Innovationsmanagement: Konzepte, Strategien und Methoden is recommended.

Below you will find excerpts from events related to this course:

V

Technologies for Innovation Management

2545106, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

The seminar "Technologies for Innovation Management" will focus on the early phase or fuzzy front end in innovation management. Technologies can be of great importance here, above all in the supply of information. In globally distributed R & D organizations, it is necessary to collect as much information as possible on new technological developments in the early phase of the innovation process. Information and communication technologies can be supported.

Literature

Werden in der ersten Veranstaltung bekannt gegeben.

T

5.303 Course: Technology Assessment [T-WIWI-102858]

Responsible: Dr. Daniel Jeffrey Koch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|-----------------|---------|
| Examination of another type | 3 | Grade to a third | see Annotations | 1 |

Competence Certificate

Alternative exam assessment.

Prerequisites

None

Recommendation

Prior attendance of the course Innovation Management is recommended.

Annotation

See German version.

T

5.304 Course: Telecommunication and Internet Economics [T-WIWI-102713]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101406 - Network Economics](#)
[M-WIWI-101409 - Electronic Markets](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Exams | | | |
|----------|---------|--|---------|
| WT 20/21 | 7900337 | Telecommunication and Internet Economics | Mitusch |

Competence Certificate

Result of success is made by a 60 minutes written examination during the semester break (according to §4(2), 1 ERSC). Examination is offered every semester and can be retried at any regular examination date.

Prerequisites

None

Recommendation

Basic knowledge and skills of microeconomics from undergraduate studies (bachelor's degree) are expected.

Particularly helpful but not necessary: Industrial Economics. Prior attendance of the lecture „Competition in Networks“ [26240] or "Industrial Organisation" is helpful in any case but not considered a formal precondition. The english taught course "Communications Economics" is complementary and recommendet for anyone interested in the sector.

Annotation


Due to the research semester of Prof. Mitusch the course for partial performance will not be offered in the winter semester 2020/2021. An examination will be offered in each semester.





T

5.305 Course: Telecommunications Law [T-INFO-101309]

Responsible: Dr. Yoan Hermstrüwer
Organisation: KIT Department of Informatics
Part of: [M-INFO-101217 - Public Business Law](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|----------|---------|---|-------|---|-------------|
| ST 2021 | 24632 | Telekommunikationsrecht | 2 SWS | Lecture /  | Hermstrüwer |
| Exams | | | | | |
| WT 20/21 | 7500049 | Telecommunications Law | | | Eichenhofer |


Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled





T

5.306 Course: Telematics [T-INFO-101338]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [M-INFO-100801 - Telematics](#)
[M-INFO-101205 - Future Networking](#)
[M-INFO-101206 - Networking](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 6 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|----------------------------|-------|---|---|
| WT 20/21 | 24128 | Telematics | 3 SWS | Lecture /  | Bauer, Friebe, Heseding, Hock, Zitterbart |
| Exams | | | | | |
| WT 20/21 | 7500166 | Telematics | | | Zitterbart |
| ST 2021 | 7500115 | Telematics | | | Zitterbart |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

Below you will find excerpts from events related to this course:

V

Telematics

24128, WS 20/21, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Content

The lecture covers (i.a.) protocols, architectures, as well as methods and algorithms, for routing and establishing reliable end-to-end connections in the Internet. In addition to various methods for media access control in local area networks, the lecture also covers other communication systems, e.g. circuit-switched systems such as ISDN. Participants should also have understood the possibilities for managing and administering networks.

Familiarity with the contents of the lecture *Einführung in Rechnernetze* or comparable lectures is assumed.

Learning Objectives

After attending this lecture, the students will

- have a profound understanding of protocols, architectures, as well as procedures and algorithms used for routing and for establishing reliable end-to-end connections in the Internet
- have a profound understanding of different media access control procedures in local networks and other communication systems like circuit-switched ISDN
- have a profound understanding of the problems that arise in large scale dynamic communication systems and are familiar with mechanism to deal with these problems
- be familiar with current developments such as SDN and data center networking
- be familiar with different aspects and possibilities for network management and administration

Students have a profound understanding of the basic protocol mechanisms that are necessary to establish reliable end-to-end communication. Students have detailed knowledge about the congestion and flow control mechanisms used in TCP and can discuss fairness issue in the context of multiple parallel transport streams. Students can analytically determine the performance of transport protocols and know techniques for dealing with specific constraints in the context of TCP, e.g., high data rates and low latencies. Students are familiar with current topics such as the problem of middle boxes on the Internet, the usage of TCP in data centers or multipath TCP. Students are also familiar with practical aspects of modern transport protocols and know practical ways to overcome heterogeneity in the development of distributed applications.

Students know the functions of (Internet) routing and routers and can explain and apply common routing algorithms. Students are familiar with routing architectures and different alternatives for buffer placement as well as their advantages and disadvantages. Students understand the classification into interior and exterior gateway protocols and have in-depth knowledge of the functionality and features of common protocols such as RIP, OSPF, and BGP. Students are also familiar with current topics such as label switching, IPv6 and SDN.

Students know the function of media access control and are able to classify and analytically evaluate different media access control mechanisms. Students have an in-depth knowledge of Ethernet and various Ethernet variants and characteristics, which especially includes current developments such as real-time Ethernet and data center Ethernet. Students can explain and apply the Spanning Tree Protocol.

Students know the architecture of ISDN and can reproduce the peculiarities of setting up the ISDN subscriber line. Students are familiar with the technical features of DSL.

Literature

S. Keshav. An Engineering Approach to Computer Networking. Addison-Wesley, 1997
 J.F. Kurose, K.W. Ross. Computer Networking: A Top-Down Approach Featuring the Internet. 4rd Edition, Addison-Wesley, 2007
 W. Stallings. Data and Computer Communications. 8th Edition, Prentice Hall, 2006
 Weiterführende Literatur •D. Bertsekas, R. Gallager. Data Networks. 2nd Edition, Prentice-Hall, 1991
 •F. Halsall. Data Communications, Computer Networks and Open Systems. 4th Edition, Addison-Wesley Publishing Company, 1996
 •W. Haaß. Handbuch der Kommunikationsnetze. Springer, 1997
 •A.S. Tanenbaum. Computer-Networks. 4th Edition, Prentice-Hall, 2004
 •Internet-Standards
 •Artikel in Fachzeitschriften

T

5.307 Course: The negotiation of open innovation [T-WIWI-110867]

Responsible: Dr. Daniela Beyer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101507 - Innovation Management](#)
[M-WIWI-101507 - Innovation Management](#)

| Type | Credits | Grading scale | Recurrence | Version |
|-----------------------------|---------|------------------|------------|---------|
| Examination of another type | 3 | Grade to a third | Once | 1 |

Competence Certificate

Non exam assessment.

The following aspects are included in the evaluation:

- Exposé of the seminar paper (15%)
- Preparation of the methodology (15%) (interview guide, quantitative survey, etc.)
- informed participation and preparation of the simulation game (20%)
- written elaboration (50%).

Prerequisites

None

Recommendation

Prior attendance of the course Innovation Management [2545015] is recommended.

T

5.308 Course: Topics in Experimental Economics [T-WIWI-102863]

Responsible: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101505 - Experimental Economics](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 4,5 | Grade to a third | Irregular | 1 |

| Exams | | | |
|----------|---------|--|------|
| WT 20/21 | 7900297 | Topics in Experimental Economics | Reiß |
| WT 20/21 | 7900362 | Topics in Experimental Economics | Reiß |

Competence Certificate

The assessment consists of a written exam (following §4(2), 1 of the examination regulation).

Prerequisites

None

Recommendation

Basic knowledge of Experimental Economics is assumed. Therefore, it is strongly recommended to attend the course Experimental Economics beforehand.

Annotation


The course is offered in summer 2020 for the next time, not in summer 2018.

T

5.309 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 | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|----------|---------|--|-------|---|--------------|
| WT 20/21 | 24136 | Trademark and Unfair Competition Law | 2 SWS | Lecture /  | Matz |
| Exams | | | | | |
| WT 20/21 | 7500061 | Trademark and Unfair Competition Law | | | Dreier, Matz |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T



5.310 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 2021 | 2560230 | Transport Economics | | Lecture /  | Mitusch, Szimba |
| ST 2021 | 2560231 | Übung zu Transportökonomie | 1 SWS | Practice /  | Mitusch, Szimba, Wisotzky |
| Exams | | | | | |
| WT 20/21 | 7900336 | Transport Economics | | | Mitusch |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

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 2021, SWS, Language: German, [Open in study portal](#)

Lecture (V)
Online

Literature**Literatur:**

Aberle, G: Transportwirtschaft: einzelwirtschaftliche und gesamtwirtschaftliche Grundlagen München; Wien: Oldenbourg, 2003.

Blauwens, G., De Baere, P. and Van der Voorde, E. (2006): Transport Economics.

Frerich, J; Müller, G: Europäische Verkehrspolitik, Landverkehrspolitik München; Wien: Oldenbourg, 2004.

Dasgupta, A, Pearce, D (1972): Cost-Benefit Analysis, MacMillan, London.


Europäische Kommission (2008): Guide to Cost Benefit Analysis of Investment Projects, online unter [Ortúzar, J. d. D. and Willumsen, L. \(1990\): Modelling Transport.](http://ec.europa.eu/regional_policy/sources/Ben-Akiva, M., Meerseman, H., and Van de Voorde, E. (2008): Recent developments in transport modelling: Lessons for the freight sector.</p>
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T

5.311 Course: Ubiquitous Computing [T-INFO-101326]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: [M-INFO-100789 - Ubiquitous Computing](#)
[M-INFO-101203 - Wireless Networking](#)
[M-INFO-101210 - Dynamic IT-Infrastructures](#)
[M-WIWI-101458 - Ubiquitous Computing](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|--------------|---|------------|---|-------|
| WT 20/21 | 24146 | Ubiquitäre Informationstechnologien | 2+1 SWS | Lecture / Practice (/ ) | Beigl |
| Exams | | | | | |
| WT 20/21 | 7500284_0125 | Ubiquitous Computing | | | Beigl |
| WT 20/21 | 7500284_0216 | Ubiquitous Computing | | | Beigl |
| WT 20/21 | 7500284_0401 | Ubiquitous Computing | | | Beigl |
| WT 20/21 | 7500284_0503 | Ubiquitous Computing | | | Beigl |
| WT 20/21 | 7500284_0506 | Ubiquitous Computing | | | Beigl |
| WT 20/21 | 7500284_1222 | Ubiquitous Computing | | | Beigl |
| ST 2021 | 7500122 | Ubiquitous Computing | | | Beigl |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.312 Course: Valuation [T-WIWI-102621]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101482 - Finance 1](#)
[M-WIWI-101483 - Finance 2](#)
[M-WIWI-101510 - Cross-Functional Management Accounting](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|----------|---------|--------------------------------------|-------|------------|------------------|
| WT 20/21 | 2530212 | Valuation | 2 SWS | Lecture / | Ruckes |
| WT 20/21 | 2530213 | Übungen zu Valuation | 1 SWS | Practice / | Ruckes, Luedecke |
| Exams | | | | | |
| WT 20/21 | 7900057 | Valuation | | | Ruckes |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

See German version.

Prerequisites

None

Recommendation

None

Below you will find excerpts from events related to this course:

V

Valuation

2530212, WS 20/21, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)
Online

Content

Firms prosper when they create value for their shareholders and stakeholders. This is achieved by investing in projects that yield higher returns than their according cost of capital. Students are told the basic tools for firm and project valuation as well as ways to implement these tools in order to enhance a firm's value and improve its investment decisions. Among other things, the course will deal with the valuation of firms and individual projects using discounted cash flow and relative valuation approaches and the valuation of flexibility deploying real options.

Topics:

- Projections of cash flows
- Estimation of the cost of capital
- Valuation of the firm
- Mergers and acquisitions
- Real options

Learning outcomes: Students are able to

- evaluate complex investment projects by taking a financial view,
- value firms,
- assess the advantageousness of potential merger and acquisitions.

Literature**Weiterführende Literatur**

Titman/Martin (2013): *Valuation - The Art and Science of Corporate Investment Decisions*, 2nd. ed. Pearson International.

T 5.313 Course: Wearable Robotic Technologies [T-INFO-106557]

Responsible: Prof. Dr.-Ing. Tamim Asfour
 Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: [M-INFO-103294 - Wearable Robotic Technologies](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------------|---------|
| Written examination | 4 | Grade to a third | Each summer term | 3 |

| Events | | | | | |
|----------|---------|---|-------|-----------|---------------|
| ST 2021 | 2400062 | Wearable Robotic Technologies | 2 SWS | Lecture / | Asfour, Beigl |
| Exams | | | | | |
| WT 20/21 | 7500073 | Wearable Robotic Technologies | | | Asfour |
| ST 2021 | 7500219 | Wearable Robotic Technologies | | | Asfour |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Below you will find excerpts from events related to this course:

V Wearable Robotic Technologies **Lecture (V) Online**
 2400062, SS 2021, 2 SWS, Language: German/English, [Open in study portal](#)

Content

The lecture starts with an overview of wearable robot technologies (exoskeletons, prostheses and orthoses) and its potentials, followed by the basics of wearable robotics. In addition to different approaches to the design of wearable robots and their related actuator and sensor technology, the lecture focuses on modeling the neuromusculoskeletal system of the human body and the physical and cognitive human-robot interaction for tightly coupled hybrid human-robot systems. Examples of current research and various applications of lower, upper and full body exoskeletons as well as prostheses are presented.

Learning Objectives:

The students have received fundamental knowledge about wearable robotic technologies and understand the requirements for the design, the interface to the human body and the control of wearable robots. They are able to describe methods for modelling the human neuromusculoskeletal system, the mechatronic design, fabrication and composition of interfaces to the human body. The students understand the symbiotic human-machine interaction as a core topic of Anthropomatics and have knowledge of state of the art examples of exoskeletons, orthoses and prostheses.

Organizational issues

Die Erfolgskontrolle erfolgt in Form einer schriftlichen Prüfung im Umfang von i.d.R. 60 Minuten nach § 4 Abs. 2 Nr. 1 SPO.

Modul für Master Maschinenbau, Mechatronik und Informationstechnik, Elektrotechnik und Informationstechnik, Sportwissenschaften

Voraussetzungen: Der Besuch der Vorlesung *Mechano-Informatik in der Robotik* wird vorausgesetzt

Arbeitsaufwand: 120h

Literature

Vorlesungsfolien und ausgewählte aktuelle Literaturangaben werden in der Vorlesung bekannt gegeben und als pdf unter <http://www.humanoids.kit.edu> verfügbar gemacht.

T

5.314 Course: Web App Programming for Finance [T-WIWI-110933]

Responsible: Jun.-Prof. Dr. Julian Thimme
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101480 - Finance 3](#)
[M-WIWI-101483 - Finance 2](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|------------|---------|
| Written examination | 4,5 | Grade to a third | Once | 1 |

Competence Certificate

Non exam assessment according to § 4 paragraph 3 of the examination regulation. (Anmerkung: gilt nur für SPO 2015). The grade is made up as follows: 50% result of the project (R-code), 50% presentation of the project.

Prerequisites

None

Recommendation

The content of the bachelor course Investments is assumed to be known and necessary to follow the course.

T


5.315 Course: Web Applications and Service-Oriented Architectures (II) [T-INFO-101271]

Responsible: Prof. Dr. Sebastian Abeck

Organisation: KIT Department of Informatics

Part of: [M-INFO-104061 - Microservice-Based Web Applications](#)

| Type | Credits | Grading scale | Recurrence | Version |
|------------------|---------|------------------|------------------|---------|
| Oral examination | 4 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---------|---------|--|-------|---|------------------|
| ST 2021 | 24677 | Web Applications and Service oriented Architectures (II) | 2 SWS | Lecture /  | Abeck, Schneider |
| Exams | | | | | |
| ST 2021 | 7500138 | Web Applications and Service-oriented Architectures (II) | | | Abeck |

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

5.316 Course: Web Science [T-WIWI-103112]

Responsible: Michael Färber
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101455 - Web Data Management](#)
[M-WIWI-105368 - Web and Data Science](#)

| Type | Credits | Grading scale | Recurrence | Version |
|---------------------|---------|------------------|-----------------|---------|
| Written examination | 4,5 | Grade to a third | see Annotations | 2 |

| Exams | | | |
|----------|---------|---|-------------|
| WT 20/21 | 7900031 | Web Science (Registration until 08 February 2021) | Sure-Vetter |
| ST 2021 | 7900032 | Web Science (Registration until 12 July 2021) | Färber |

Competence Certificate

The exam will be offered for the last time for first-time takers in the summer semester 2021. The last opportunity to take the exam (for repeaters only) is in the winter semester 2021/22.

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (20 min) following §4, Abs. 2, 2 of the examination regulation.

The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites

None

Annotation

The lecture is no longer offered.

T

5.317 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 20/21 | 2577922 | Workshop Business Wargaming - Analyse strategischer Interaktionen (Master) | 2 SWS | Seminar / | Lindstädt |
| ST 2021 | 2577922 | Workshop Business Wargaming - Analyse strategischer Interaktionen (Master) | 2 SWS | Seminar / | Lindstädt |
| Exams | | | | | |
| WT 20/21 | 7900172 | Workshop Business Wargaming – Analyzing Strategic Interactions | | | Lindstädt |
| ST 2021 | 7900071 | Workshop Business Wargaming – Analyzing Strategic Interactions | | | Lindstädt |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Competence Certificate

In this course, real conflict situations are simulated and analyzed using various methods from business wargaming. Details on the design of the performance review will be announced during the lecture.

Prerequisites

None

Recommendation

Basic knowledge as conveyed in the bachelor module „Strategy and Organization“ is recommended.

Annotation

This course is admission restricted. If you were already admitted to another course in the module “Advanced Topics in Strategy and Management” the participation at this course will be guaranteed.

The course is planned to be held for the first time in the summer term 2018.

Below you will find excerpts from events related to this course:

V

Workshop Business Wargaming - Analyse strategischer Interaktionen (Master)

2577922, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

In this lecture, current economic trends will be discussed from a perspective of competition analysis and corporate strategies. Using appropriate frameworks, the students will be able to analyze collectively selected case studies and derive business strategies.

Learning Objectives:

Students

- are able to analyze business strategies and derive recommendations for the management
- learn to express their position through compelling reasoning in structured discussions

Recommendations:

Basic knowledge as conveyed in the bachelor module "Strategy and Organization" is recommended.

Workload:

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

Assessment:

In this course, real conflict situations are simulated and analyzed using various methods from business wargaming. Details on the design of the success control will be announced during the lecture.

Note:

This course is admission restricted. If you were already admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed. Further information on the application process can be found on the IBU website.

The examinations are offered at least every second semester, so that the entire module can be completed in two semesters.

Organizational issues

4 Blöcke mittwochs nachmittags

siehe Institutshomepage

**Workshop Business Wargaming - Analyse strategischer Interaktionen (Master)**

2577922, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

In this lecture, current economic trends will be discussed from a perspective of competition analysis and corporate strategies. Using appropriate frameworks, the students will be able to analyze collectively selected case studies and derive business strategies.

Learning Objectives:

Students

- are able to analyze business strategies and derive recommendations for the management
- learn to express their position through compelling reasoning in structured discussions

Recommendations:

Basic knowledge as conveyed in the bachelor module "Strategy and Organization" is recommended.

Workload:

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

Assessment:

In this course, real conflict situations are simulated and analyzed using various methods from business wargaming. Details on the design of the success control will be announced during the lecture.

Note:

This course is admission restricted. If you were already admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed. Further information on the application process can be found on the IBU website.

The examinations are offered at least every second semester, so that the entire module can be completed in two semesters.

Organizational issues

4 Blöcke mittwochs nachmittags

siehe Institutshomepage

T

5.318 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 | | | | | |
|----------|---------|--|-------|-----------|-----------|
| WT 20/21 | 2577923 | Workshop aktuelle Themen Strategie und Management (Master) | 2 SWS | Seminar / | Lindstädt |
| Exams | | | | | |
| WT 20/21 | 7900171 | Workshop Current Topics in Strategy and Management | | | 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, WS 20/21, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)
Online

Content

In this lecture, students discuss and evaluate models in the field of strategic management with a focus on applicability and theory based limitations. Critical examination of current research results will be a substantial part of this course.

Learning Objectives:

Students

- are able to explain and evaluate theoretical approaches and models in the field of strategic management and can illustrate them by tangible examples
- learn to express their position in structured discussions

Recommendations:

Basic knowledge as conveyed in the bachelor module "Strategy and Organization" is recommended.

Workload:

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

Assessment:

The assessment of performance is made through active participation in the discussion rounds; adequate preparation is expressed here and a clear understanding of the topic and framework becomes evident. Further details on the design of the success control will be announced during the lecture.

Note:

This course is admission restricted. If you were already admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed. Further information on the application process can be found on the IBU website.

The examinations are offered at least every second semester, so that the entire module can be completed in two semesters.

Organizational issues

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