Dear Exchange Students,
welcome to the KIT Department of Economics and Management!

Please use this module handbook for your course selection. It contains all courses offered in both Bachelor's and Master's degrees. Please be noted that at least 70% of your total credits must be courses you find in this module handbook. The rest can be chosen freely from the KIT-wide course offer.

Make sure to check the indicated language of instruction and the recurrence of each course carefully. If you are studying in the winter term, you can´t take courses that are only offered in the summer term. Likewise, if you do not have German language proficiency at B1 level, you cannot choose courses that are taught exclusively in German. For English-taught courses please refer to: https://www.wiwi.kit.edu/english/CoursesInEnglish.php.

The exam appointments are published at https://www.wiwi.kit.edu/english/pruefungstermine.php. If the exam date for a specific course is not listed, please get in touch with the office of the respective institute. To be eligible to take the exam, you must include the course in your personal study plan in the KIT Campus Management System. For most of the seminars, registration is necessary on WiWi-Portal: https://portal.wiwi.kit.edu/ys.

You can find the location of the lecture / seminar in KIT Campus Management System by searching for the respective course: https://campus.studium.kit.edu/index.php

We wish you a good start in the new semester and a lot of success in studying at the KIT Department of Economics and Management.

Karlsruher Institut für Technologie

Module Handbook
KIT Department of Economics and Management – Non-degree Studies (Degree Abroad)

SPO 0

Summer semester 2025

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KIT DEPARTMENT OF ECONOMICS AND MANAGEMENT

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3.320. Macroeconomic Theory - T-WIWI-109121 483
3.321. Management Accounting 1 - T-WIWI-102800 484
3.322. Management Accounting 2 - T-WIWI-102801 486
3.323. Management and Marketing - T-WIWI-111594 488
3.324. Management of IT-Projects - T-WIWI-113968 489
3.325. Managing New Technologies - T-WIWI-102612 491
3.326. Managing Organizations - T-WIWI-102630 492
3.327. Managing the Marketing Mix - T-WIWI-102805 494
3.328. Manufacturing Technology - T-MACH-102105 496
3.329. Market Research - T-WIWI-107720 498
3.330. Marketing Analytics - T-WIWI-103139 500
3.331. Marketing Strategy Business Game - T-WIWI-102835 502
3.332. Master's Thesis - T-WIWI-103142 503
3.333. Matching Theory - T-WIWI-113264 504
3.334. Material Science II for Business Engineers - T-MACH-102079 505
3.335. Materials Science I - T-MACH-102078 506
3.336. Mathematical Models and Methods for Production Systems - T-MACH-105189 507
3.337. Mathematics for High Dimensional Statistics - T-WIWI-111247 509
3.338. Mathematics I - Final Exam - T-MATH-111493 510
3.339. Mathematics I - Midterm Exam - T-MATH-111492 511
3.340. Mathematics II - Final Exam - T-MATH-111496 512
3.341. Mathematics II - Midterm Exam - T-MATH-111495 513
3.342. Mathematics III - Final Exam - T-MATH-111498 514
3.343. Measurement and Control Technology - T-ETIT-112852 515
3.344. Mechanical Design I and II - CIW - T-MACH-104739 516
3.345. Mechanical Design I, Tutorial - T-MACH-102132 517
3.346. Mechanical Design II, Tutorial - T-MACH-102133 518
3.347. Mechatronical Systems and Products - T-MACH-112647 519

3.348. Media Management - T-WIWI-112711 520
3.349. Metal Forming - T-MACH-105177 522
3.350. Methods and Models in Transportation Planning - T-BGU-101797 524
3.351. Methods in Economics - T-WIWI-114054 525
3.352. Microactuators - T-MACH-101910 526
3.353. Microeconometrics - T-WIWI-112153 527
3.354. Microenergy Technologies - T-MACH-105557 528
3.355. Mixed Integer Programming I - T-WIWI-102719 529
3.356. Mixed Integer Programming II - T-WIWI-102720 530
3.357. Mobility Services and New Forms of Mobility - T-BGU-103425 531
3.358. Model Based Application Methods - T-MACH-102199 532
3.359. Modeling and OR-Software: Advanced Topics - T-WIWI-106200 533
3.360. Modeling and OR-Software: Introduction - T-WIWI-106199 534
3.361. Modeling and Simulation - T-WIWI-112685 535
3.362. Modeling the Dynamics of Financial Markets - T-WIWI-113414 537
3.363. Modelling and Identification - T-ETIT-100699 538
3.364. Morphodynamics - T-BGU-101859 539
3.365. Multicriteria Optimization - T-WIWI-111587 540
3.366. Multivariate Statistical Methods - T-WIWI-103124 542
3.367. Nanotribology and -Mechanics - T-MACH-102167 543
3.368. Nature-Inspired Optimization Methods - T-WIWI-102679 546
3.369. Network Security: Architectures and Protocols - T-INFO-101319 547
3.370. Non- and Semiparametrics - T-WIWI-103126 548
3.371. Nonlinear Optimization I - T-WIWI-102724 549
3.372. Nonlinear Optimization I and II - T-WIWI-103637 551
3.373. Nonlinear Optimization II - T-WIWI-102725 553
3.374. Novel Actuators and Sensors - T-MACH-102152 555
3.375. Online Concepts for Karlsruhe City Retailers - T-WIWI-111848 556
3.376. Operation Methods for Earthmoving - T-BGU-101801 557
3.377. Operation Methods for Foundation and Marine Construction - T-BGU-101832 558
3.378. Operations Research in Health Care Management - T-WIWI-102884 559
3.379. Operations Research in Supply Chain Management - T-WIWI-102715 561
3.380. Operative CRM - T-WIWI-102597 563
3.381. Optical Transmitters and Receivers - T-ETIT-100639 564
3.382. Optical Waveguides and Fibers - T-ETIT-101945 565
3.383. Optimization under Uncertainty - T-WIWI-106545 566
3.384. Optoelectronic Components - T-ETIT-101907 567
3.385. Panel Data - T-WIWI-103127 568
3.386. Parallel Computer Systems and Parallel Programming - T-INFO-101345 569
3.387. Parametric Optimization - T-WIWI-102855 570
3.388. Patent Law - T-INFO-101310 571
3.389. Photovoltaic System Design - T-ETIT-100724 572
3.390. Physical Basics of Laser Technology - T-MACH-102102 573
3.391. Physics for Engineers - T-MACH-100530 575
3.392. Pioneering Leadership in German SMEs - T-WIWI-114184 577
3.393. Platform & Market Engineering: Commerce, Media, and Digital Democracy - T-WIWI-112823 578
3.394. Platform Economy - T-WIWI-107506 580
3.395. PLM for Product Development in Mechatronics - T-MACH-102181 582
3.396. PLM-CAD Workshop - T-MACH-102153 583
3.397. Polymer Engineering I - T-MACH-102137 585
3.398. Polymer Engineering II - T-MACH-102138 587
3.399. Polymers in MEMS A: Chemistry, Synthesis and Applications - T-MACH-102192 589
3.400. Polymers in MEMS B: Physics, Microstructuring and Applications - T-MACH-102191 590
3.401. Polymers in MEMS C: Biopolymers and Bioplastics - T-MACH-102200 591
3.402. Portfolio and Asset Liability Management - T-WIWI-103128 593
3.403. Power Generation - T-ETIT-101924 594
3.404. Power Network - T-ETIT-100830 595
3.405. Practical Course Polymers in MEMS - T-MACH-105556 596
3.406. Practical Course Technical Ceramics - T-MACH-105178 597
3.407. Practical Seminar Digital Service Systems - T-WIWI-106563 598
3.408. Practical Seminar Interaction - T-WIWI-109935 599
3.409. Practical Seminar Platforms - T-WIWI-109937 600

3.410. Practical Seminar Servitization - T-WIWI-109939 601
3.411. Practical Seminar: Advanced Analytics - T-WIWI-108765 602
3.412. Practical Seminar: Artificial Intelligence in Service Systems - T-WIWI-112152 603
3.413. Practical Seminar: Data-Driven Information Systems - T-WIWI-106207 604
3.414. Practical Seminar: Digital Services - T-WIWI-110888 605
3.415. Practical Seminar: Health Care Management (with Case Studies) - T-WIWI-102716 606
3.416. Practical Seminar: Human-Centered Systems - T-WIWI-113459 607
3.417. Practical Seminar: Interactive Systems - T-WIWI-111914 608
3.418. Practical Seminar: Platform Economy - T-WIWI-112154 609
3.419. Practical Seminar: Service Innovation - T-WIWI-110887 610
3.420. Practical Training in Basics of Microsystem Technology - T-MACH-102164 611
3.421. Predictive Mechanism and Market Design - T-WIWI-102862 613
3.422. Predictive Modeling - T-WIWI-110868 614
3.423. Price Management - T-WIWI-105946 615
3.424. Pricing - T-WIWI-102883 616
3.425. Principles of Ceramic and Powder Metallurgy Processing - T-MACH-102111 618
3.426. Principles of Food Process Engineering - T-CIWVT-101874 619
3.427. Principles of Insurance Management - T-WIWI-102603 620
3.428. Principles of Whole Vehicle Engineering - T-MACH-114075 621
3.429. Probabilistic Time Series Forecasting Challenge - T-WIWI-111387 622
3.430. Problem Solving, Communication and Leadership - T-WIWI-102871 624
3.431. Procedures of Remote Sensing - T-BGU-103542 626
3.432. Procedures of Remote Sensing, Prerequisite - T-BGU-101638 627
3.433. Process Engineering - T-BGU-101844 628
3.434. Process Fundamentals by the Example of Food Production - T-CIWVT-106058 629
3.435. Process Mining - T-WIWI-109799 630
3.436. Product- and Production-Concepts for Modern Automobiles - T-MACH-110318 632
3.437. Product Lifecycle Management - T-MACH-105147 634
3.438. Production and Logistics - T-WIWI-111632 636
3.439. Production and Logistics Management - T-WIWI-102632 637
3.440. Production Economics and Sustainability - T-WIWI-102820 638
3.441. Production Technology for E-Mobility - T-MACH-110984 639
3.442. Production, Logistics and Information Systems - T-WIWI-111602 641
3.443. Programming - T-INFO-101531 642
3.444. Programming Pass - T-INFO-101967 643
3.445. Project in Applied Remote Sensing - T-BGU-101814 644
3.446. Project Lab Cognitive Automobiles and Robots - T-WIWI-109985 645
3.447. Project Lab Machine Learning - T-WIWI-109983 647
3.448. Project Management - T-WIWI-103134 649
3.449. Project Management in Construction and Real Estate Industry I - T-BGU-103432 650
3.450. Project Management in Construction and Real Estate Industry II - T-BGU-103433 652
3.451. Project Paper Lean Construction - T-BGU-101007 654
3.452. Project Studies - T-BGU-101847 655
3.453. Project Workshop: Automotive Engineering - T-MACH-102156 656
3.454. Public Law I & II - T-INFO-110300 658
3.455. Public Management - T-WIWI-102740 659
3.456. Public Media Law - T-INFO-101311 660
3.457. Public Revenues - T-WIWI-102739 661
3.458. Python Algorithms for Vehicle Technology - T-MACH-110796 662
3.459. Quality Management - T-MACH-102107 664
3.460. Quantitative Methods in Energy Economics - T-WIWI-107446 666
3.461. Quantum Functional Devices and Semiconductor Technology - T-ETIT-100740 667
3.462. Rail System Technology - T-MACH-102143 668
3.463. Real Estate Economics and Sustainability Part 1: Basics and Valuation - T-WIWI-102838 670
3.464. Real Estate Economics and Sustainability Part 2: Reporting and Rating - T-WIWI-102839 671
3.465. Real Estate Management I - T-WIWI-102744 672
3.466. Real Estate Management II - T-WIWI-102745 673
3.467. Recommender Systems - T-WIWI-102847 674
3.468. Regulation Theory and Practice - T-WIWI-102712 678
3.469. Reinforcement Learning - T-INFO-111255 679
3.470. Remote Sensing, Exam - T-BGU-101636 681
3.471. Renewable Energy-Resources, Technologies and Economics - T-WIWI-100806 682

3.472. Requirements Engineering - T-INFO-101300 684
3.473. Responsible Artificial Intelligence - T-WIWI-111385 685
3.474. Risk Communication - T-WIWI-102649 686
3.475. Risk Management in Industrial Supply Networks - T-WIWI-102826 687
3.476. Safety Engineering - T-MACH-105171 688
3.477. Safety Management in Highway Engineering - T-BGU-101674 689
3.478. Selected Applications of Technical Logistics - T-MACH-102160 690
3.479. Selected Applications of Technical Logistics - Project - T-MACH-108945 691
3.480. Selected Legal Issues of Internet Law - T-INFO-108462 692
3.481. Self-Booking-HOC-SPZ-FORUM-STK-Graded - T-WIWI-113353 693
3.482. Self-Booking-HOC-SPZ-FORUM-STK-Graded - T-WIWI-113354 694
3.483. Self-Booking-HOC-SPZ-FORUM-STK-Graded - T-WIWI-111438 695
3.484. Self-Booking-HOC-SPZ-FORUM-STK-Graded - T-WIWI-111440 696
3.485. Self-Booking-HOC-SPZ-FORUM-STK-Graded - T-WIWI-111439 697
3.486. Self-Booking-HOC-SPZ-FORUM-STK-Graded - T-WIWI-113352 698
3.487. Self-Booking-HOC-SPZ-FORUM-STK-Ungraded - T-WIWI-113357 699
3.488. Self-Booking-HOC-SPZ-FORUM-STK-Ungraded - T-WIWI-111441 700
3.489. Self-Booking-HOC-SPZ-FORUM-STK-Ungraded - T-WIWI-111443 701
3.490. Self-Booking-HOC-SPZ-FORUM-STK-Ungraded - T-WIWI-113355 702
3.491. Self-Booking-HOC-SPZ-FORUM-STK-Ungraded - T-WIWI-113356 703
3.492. Self-Booking-HOC-SPZ-FORUM-STK-Ungraded - T-WIWI-111442 704
3.493. Semantic Web Technologies - T-WIWI-110848 705
3.494. Seminar Creating a Patent Specification - T-ETIT-100754 708
3.495. Seminar Data-Mining in Production - T-MACH-108737 709
3.496. Seminar in Business Administration (Bachelor) - T-WIWI-103486 711
3.497. Seminar in Business Administration A (Master) - T-WIWI-103474 724
3.498. Seminar in Business Administration B (Master) - T-WIWI-103476 737
3.499. Seminar in Economic Policy - T-WIWI-102789 750
3.500. Seminar in Economics (Bachelor) - T-WIWI-103487 751
3.501. Seminar in Economics A (Master) - T-WIWI-103478 756
3.502. Seminar in Economics B (Master) - T-WIWI-103477 762
3.503. Seminar in Engineering Science Master (approval) - T-WIWI-108763 768
3.504. Seminar in Informatics (Bachelor) - T-WIWI-103485 769
3.505. Seminar in Informatics A (Master) - T-WIWI-103479 773
3.506. Seminar in Informatics B (Master) - T-WIWI-103480 786
3.507. Seminar in Mathematics (Bachelor) - T-MATH-102265 799
3.508. Seminar in Operations Research (Bachelor) - T-WIWI-103488 800
3.509. Seminar in Operations Research A (Master) - T-WIWI-103481 803
3.510. Seminar in Operations Research B (Master) - T-WIWI-103482 806
3.511. Seminar in Statistics (Bachelor) - T-WIWI-103489 809
3.512. Seminar in Statistics A (Master) - T-WIWI-103483 812
3.513. Seminar in Statistics B (Master) - T-WIWI-103484 815
3.514. Seminar in Transportation - T-BGU-100014 818
3.515. Seminar Methods along the Innovation process - T-WIWI-110987 819
3.516. Seminar Production Technology - T-MACH-109062 820
3.517. Seminar Sensors - T-ETIT-100707 822
3.518. Seminar: Governance, Risk & Compliance - T-INFO-102047 823
3.519. Seminar: Legal Studies I - T-INFO-101997 824
3.520. Seminar: Legal Studies II - T-INFO-105945 829
3.521. Sensor Systems - T-ETIT-100709 834
3.522. Sensors - T-ETIT-101911 835
3.523. Service Design Thinking - T-WIWI-102849 836
3.524. Service Operations and Cyber Security - T-WIWI-114109 839
3.525. Services Marketing and B2B Marketing - T-WIWI-102806 840
3.526. Simulation Game in Energy Economics - T-WIWI-108016 841
3.527. Simulation of Coupled Systems - T-MACH-105172 842
3.528. Simulation of Coupled Systems - Advance - T-MACH-108888 843
3.529. Site Management - T-BGU-103427 844
3.530. Smart Energy Infrastructure - T-WIWI-107464 845
3.531. Smart Grid Applications - T-WIWI-107504 846
3.532. Social Choice Theory - T-WIWI-102859 847
3.533. Social Dimensions of Energy Transitions - T-WIWI-113935 848

3.534. Social Science A (WiWi) - T-GEISTSOZ-109048 849
3.535. Social Science B (WiWi) - T-GEISTSOZ-109049 851
3.536. Sociotechnical Information Systems Development - T-WIWI-109249 852
3.537. Software Architecture and Quality - T-INFO-101381 853
3.538. Software Engineering - T-WIWI-100809 854
3.539. Software Quality Management - T-WIWI-102895 855
3.540. Solar Thermal Energy Systems - T-MACH-106493 857
3.541. Spatial Economics - T-WIWI-103107 859
3.542. Special Topics in Highway Engineering and Environmental Impact Assessment - T-BGU-101860 861
3.543. Special Topics in Information Systems - T-WIWI-113724 862
3.544. Special Topics in Information Systems - T-WIWI-113726 863
3.545. Special Topics in Information Systems - T-WIWI-113723 864
3.546. Special Topics in Information Systems - T-WIWI-113725 865
3.547. Special Topics in Information Systems - T-WIWI-109940 866
3.548. Startup Experience - T-WIWI-111561 867
3.549. Statistical Modeling of Generalized Regression Models - T-WIWI-103065 870
3.550. Statistics I - T-WIWI-102737 871
3.551. Statistics II - T-WIWI-102738 872
3.552. Stochastic Calculus and Finance - T-WIWI-103129 874
3.553. Strategic Management - T-WIWI-113090 876
3.554. Strategic Transport Planning - T-BGU-103426 878
3.555. Strategy and Management Theory: Developments and “Classics” - T-WIWI-106190 879
3.556. Structural and Phase Analysis - T-MACH-102170 881
3.557. Superhard Thin Film Materials - T-MACH-102103 882
3.558. Supplement Enterprise Information Systems - T-WIWI-110346 884
3.559. Supplement Software- and Systemsengineering - T-WIWI-110372 885
3.560. Supply Chain Management with Advanced Planning Systems - T-WIWI-102763 886
3.561. Sustainable Production Economics - T-MACH-111859 888
3.562. Systematic Materials Selection - T-MACH-100531 890
3.563. Systems of Remote Sensing, Prerequisite - T-BGU-101637 892
3.564. Tactical and Operational Supply Chain Management - T-WIWI-102714 893
3.565. Tax Law - T-INFO-111437 895
3.566. Team Project Management and Technology - T-WIWI-110968 896
3.567. Team Project Management and Technology (BUS/ENG) - T-WIWI-110977 897
3.568. Telecommunications and Internet – Economics and Policy - T-WIWI-113147 898
3.569. Telecommunications Law - T-INFO-101309 900
3.570. Tendering, Planning and Financing in Public Transport - T-BGU-101005 901
3.571. Tires and Wheel Development for Passenger Cars - T-MACH-102207 902
3.572. Topics in Experimental Economics - T-WIWI-102863 904
3.573. Topics in Stochastic Optimization - T-WIWI-112109 905
3.574. Trademark and Unfair Competition Law - T-INFO-101313 906
3.575. Traffic Engineering - T-BGU-101798 907
3.576. Traffic Flow Simulation - T-BGU-101800 908
3.577. Traffic Management and Transport Telematics - T-BGU-101799 909
3.578. Transport Economics - T-WIWI-100007 910
3.579. Transportation Data Analysis - T-BGU-100010 911
3.580. Transportation Systems - T-BGU-106610 912
3.581. Trustworthy Emerging Technologies - T-WIWI-113026 913
3.582. Tunnel Construction and Blasting Engineering - T-BGU-101846 914
3.583. Tutoring: Training and Practice - T-WIWI-112967 915
3.584. Ubiquitous Computing - T-INFO-101326 916
3.585. Valuation - T-WIWI-102621 917
3.586. Virtual Engineering I - T-MACH-102123 918
3.587. Virtual Engineering II - T-MACH-102124 920
3.588. Virtual Engineering Lab - T-MACH-106740 921
3.589. Virtual Reality Practical Course - T-MACH-102149 922
3.590. Virtual Training Factory 4.X - T-MACH-106741 923
3.591. Visual Computing - T-WIWI-110108 924
3.592. Warehousing and Distribution Systems - T-MACH-105174 925
3.593. Water Chemistry and Water Technology I - T-CIWVT-101900 927
3.594. Web Applications and Service-Oriented Architectures (II) - T-INFO-101271 928
3.595. Welding Technology - T-MACH-105170 929

3.596. Welfare Economics - T-WIWI-102610 931
3.597. Windpower - T-MACH-105234 933
3.598. Workshop Business Wargaming – Analyzing Strategic Interactions - T-WIWI-106189 934
3.599. Workshop Current Topics in Strategy and Management - T-WIWI-106188 937
3.600. Workshop Mechatronical Systems and Products - T-MACH-112648 939
3.601. X-ray Optics - T-MACH-109122 940

1 Study Program Structure

Mandatory	
Thesis	12-30 CP
KIT-Department of Economics and Management Courses	0-240 CP
Other KIT-Departments Courses and Interdisciplinary Qualifications	0-240 CP

1.1 Thesis

Credits
12-30

Thesis (Election: at most 1 item)				
M-WIWI-101601	Module Bachelor's Thesis	DE	WS+SS	12 CP
M-WIWI-101650	Module Master's Thesis	DE	WS+SS	30 CP

Prerequisites
none

1.2 KIT-Department of Economics and Management Courses

Credits
0-240

Subject Areas (Election: at most 240 credits)				
M-WIWI-104900	Business Administration	DE	WS+SS	60 CP
M-WIWI-104901	Informatics (KIT-Department of Economics and Management)	DE	WS+SS	55 CP
M-WIWI-104899	Operations Research	DE	WS+SS	40 CP
M-WIWI-104902	Statistics	DE	WS+SS	40 CP
M-WIWI-104908	Economics	DE	WS+SS	45 CP

1.3 Other KIT-Departments Courses and Interdisciplinary Qualifications

Credits
0-240

Election notes
In the selection list you will only find courses that are included in the module handbook of Industrial Engineering and Management. If you wish to add a course that is not available in the selection list, you must apply for participation in the course and examination via the online form to the responsible examiner.

Modules of Other KIT-Departments (Election: at most 240 credits)				
M-WIWI-104909	Informatics (Department of Informatics)	DE	WS+SS	30 CP
M-WIWI-104907	Engineering Sciences	DE	WS+SS	60 CP
M-WIWI-104906	Social Sciences	DE	WS+SS	18 CP
M-WIWI-104905	Mathematics	DE	WS+SS	30 CP
M-WIWI-104904	Natural Sciences	DE	WS+SS	20 CP
M-WIWI-104903	Law	DE	WS+SS	40 CP
M-WIWI-104910	Interdisciplinary Qualifications	DE	WS+SS	40 CP

2 Modules

M 2.1 Module: Business Administration [M-WIWI-104900]

Responsible: Professorenschaft des Fachbereichs Betriebswirtschaftslehre
Organisation: KIT Department of Economics and Management
Part of: KIT-Department of Economics and Management Courses

Credits	Grading	Recurrence	Duration	Language	Level	Version
60 CP	pass/fail	Each term	1 term	German	4	13

Elective Courses on Business Administration (Election: at most 60 credits)			
T-WIWI-114210	(Gen)AI-based Automation in Organizations	4,5 CP	Mädche
T-WIWI-113469	Advanced Corporate Finance	4,5 CP	Ruckes
T-WIWI-110513	Advanced Empirical Asset Pricing	4,5 CP	Thimme
T-WIWI-109921	Advanced Machine Learning	4,5 CP	Geyer-Schulz, Nazemi
T-WIWI-111305	Advanced Machine Learning and Data Science	9 CP	Ulrich
T-WIWI-102885	Advanced Management Accounting	4,5 CP	Wouters
T-WIWI-111912	Advanced Topics in Digital Management	3 CP	Nieken
T-WIWI-111913	Advanced Topics in Human Resource Management	3 CP	Nieken
T-WIWI-109819	Current Research Topics in Business Information Systems	1 CP	Mädche
T-WIWI-102596	Analytical CRM	4,5 CP	Geyer-Schulz
T-WIWI-114173	Design and Operation of Industrial Plants and Processes	5,5 CP	Schultmann
T-WIWI-108715	Artificial Intelligence in Service Systems	4,5 CP	Satzger
T-WIWI-114209	Artificial Intelligence in Service Systems II: Generative AI Applications & Adoption	4,5 CP	Satzger
T-WIWI-102647	Asset Pricing	4,5 CP	Ruckes, Uhrig-Homburg
T-WIWI-102613	Auction Theory	4,5 CP	Ehrhart
T-WIWI-106495	Automated Financial Advisory	3 CP	Ulrich
T-WIWI-111367	B2B Sales Management	4,5 CP	Klarmann
T-WIWI-102742	Design, Construction and Sustainability Assessment of Buildings I	4,5 CP	Lützkendorf
T-WIWI-102743	Design, Construction and Sustainability Assessment of Buildings II	4,5 CP	Lützkendorf
T-WIWI-113471	Bayesian Statistics for Analyzing Data	4,5 CP	Scheibehenne
T-WIWI-111393	Behavioral Experiments in Action	4,5 CP	Scheibehenne
T-WIWI-113095	Behavioral Lab Exercise	4,5 CP	Nieken, Scheibehenne
T-WIWI-111806	Behavioral Lab Exercise	4,5 CP	Nieken, Scheibehenne
T-WIWI-102819	Business Administration: Finance and Accounting	4 CP	Ruckes, Uhrig-Homburg, Wouters
T-WIWI-102818	Business Administration: Production Economics and Marketing	4 CP	Fichtner, Klarmann, Lützkendorf, Ruckes, Schultmann
T-WIWI-102817	Business Administration: Strategic Management and Information Engineering and Management	3 CP	Nieken, Ruckes
T-WIWI-110995	Bond Markets	4,5 CP	Uhrig-Homburg
T-WIWI-110997	Bond Markets - Models & Derivatives	3 CP	Uhrig-Homburg
T-WIWI-110996	Bond Markets - Tools & Applications	1,5 CP	Uhrig-Homburg
T-WIWI-112156	Brand Management	4,5 CP	Kupfer
T-WIWI-106187	Business Data Strategy	4,5 CP	Weinhardt
T-WIWI-102762	Business Dynamics	4,5 CP	Geyer-Schulz, Glenn
T-WIWI-105777	Business Intelligence Systems	4,5 CP	Mädche
T-WIWI-114057	Circular Economy – Challenges and Potentials	3,5 CP	Schultmann
T-WIWI-111392	Cognitive Modeling	4,5 CP	Scheibehenne

T-WIWI-114186	Collective Intelligence in Human Judgment and Decision Making	4,5 CP	Scheibehenne
T-WIWI-106496	Computational FinTech with Python and C++	1,5 CP	Ulrich
T-WIWI-114185	Computational Modelling of Judgments, Decisions and Cognition	4,5 CP	Scheibehenne
T-WIWI-114292	Consumer Psychology	4,5 CP	Scheibehenne
T-WIWI-109050	Corporate Risk Management	4,5 CP	Ruckes
T-WIWI-111100	Current Directions in Consumer Psychology	4,5 CP	Scheibehenne
T-WIWI-102595	Customer Relationship Management	4,5 CP	Geyer-Schulz
T-WIWI-114089	Data Science for Business	4,5 CP	Pfeiffer
T-WIWI-102643	Derivatives	4,5 CP	Uhrig-Homburg
T-WIWI-102866	Design Thinking	3 CP	Terzidis
T-WIWI-113664	Design Thinking in Practice	3 CP	Scheydt
T-WIWI-113465	Designing Interactive Systems: Human-AI Interaction	4,5 CP	Mädche
T-WIWI-102806	Services Marketing and B2B Marketing	3 CP	Feurer
T-WIWI-113160	Digital Democracy	4,5 CP	Fegert
T-WIWI-112693	Digital Marketing	4,5 CP	Kupfer
T-WIWI-106981	Digital Marketing and Sales in B2B	1,5 CP	Klarmann, Konhäuser
T-WIWI-112228	Digital Markets and Market Design	4,5 CP	Hillenbrand
T-WIWI-111307	Digital Services: Foundations	4,5 CP	Holtmann, Vössing
T-WIWI-112757	Digital Services: Innovation & Business Models	4,5 CP	Satzger
T-WIWI-114174	Economic Decision Making	4,5 CP	Scheibehenne
T-WIWI-112822	Economics of Innovation	4,5 CP	Ott
T-WIWI-102793	Efficient Energy Systems and Electric Mobility	3,5 CP	Jochem
T-WIWI-110797	eFinance: Information Systems for Securities Trading	4,5 CP	Weinhardt
T-WIWI-102746	Introduction to Energy Economics	5,5 CP	Fichtner
T-WIWI-102634	Emissions into the Environment	3,5 CP	Karl
T-WIWI-102650	Energy and Environment	3,5 CP	Karl
T-WIWI-102607	Energy Policy	3,5 CP	Wietschel
T-WIWI-107501	Energy Market Engineering	4,5 CP	Weinhardt
T-WIWI-107503	Energy Networks and Regulation	4,5 CP	Weinhardt
T-WIWI-112151	Energy Trading and Risk Management	3,5 CP	N.N.
T-WIWI-106193	Engineering FinTech Solutions	9 CP	Ulrich
T-WIWI-113460	Engineering Interactive Systems: AI & Wearables	4,5 CP	Mädche
T-WIWI-102608	Enterprise Risk Management	4,5 CP	Werner
T-WIWI-113746	Enterprise Systems for Financial Accounting & Controlling	4,5 CP	Fleig, Mädche
T-WIWI-102864	Entrepreneurship	3 CP	Terzidis
T-WIWI-113151	Entrepreneurship Seasonal School	3 CP	Terzidis
T-WIWI-102894	Entrepreneurship Research	3 CP	Terzidis
T-WIWI-113663	Development of Sustainable, Digital Business Models	3 CP	Weissenberger-Eibl
T-WIWI-102614	Experimental Economics	4,5 CP	Weinhardt
T-WIWI-111395	Experimental Design	4,5 CP	Scheibehenne
T-WIWI-102852	Case Studies Seminar: Innovation Management	3 CP	Weissenberger-Eibl
T-WIWI-107505	Financial Accounting for Global Firms	4,5 CP	Luedecke
T-WIWI-102900	Financial Analysis	4,5 CP	Luedecke
T-WIWI-102605	Financial Management	4,5 CP	Ruckes
T-WIWI-102623	Financial Intermediation	4,5 CP	Ruckes
T-WIWI-112694	FinTech	4,5 CP	Thimme
T-WIWI-109816	Foundations of Interactive Systems	4,5 CP	Mädche
T-WIWI-102865	Business Planning	3 CP	Terzidis
T-WIWI-112103	Global Manufacturing	3,5 CP	Sasse
T-WIWI-102606	Fundamentals of Production Management	5,5 CP	Schultmann
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	4,5 CP	Gutekunst, Wigger

T-WIWI-112820	Introduction to Finance and Accounting	5 CP	Luedecke, Ruckes, Strych, Uhrig-Homburg, Wouters
T-WIWI-113745	HR-Management 1: HR Strategies in the Age of AI	4,5 CP	Nieken
T-WIWI-114178	HR-Management 2: Organization, Fairness & Leadership	4,5 CP	Nieken
T-WIWI-102838	Real Estate Economics and Sustainability Part 1: Basics and Valuation	4,5 CP	Lorenz
T-WIWI-102839	Real Estate Economics and Sustainability Part 2: Reporting and Rating	4,5 CP	Lorenz
T-WIWI-102893	Innovation Management: Concepts, Strategies and Methods	3 CP	Weissenberger-Eibl
T-WIWI-102636	Insurance Risk Management	2,5 CP	Maser
T-WIWI-111267	Intelligent Agent Architectures	4,5 CP	Geyer-Schulz
T-WIWI-110915	Intelligent Agents and Decision Theory	4,5 CP	Geyer-Schulz
T-WIWI-110985	International Business Development and Sales	6 CP	Casenave , Klarmann, Terzidis
T-WIWI-102807	International Marketing	1,5 CP	Feurer
T-WIWI-102646	International Finance	3 CP	Uhrig-Homburg
T-WIWI-111028	Introduction to Machine Learning	4,5 CP	Geyer-Schulz, Nazemi
T-WIWI-111029	Introduction to Neural Networks and Genetic Algorithms	4,5 CP	Geyer-Schulz
T-WIWI-102604	Investments	4,5 CP	Uhrig-Homburg
T-WIWI-109064	Joint Entrepreneurship Summer School	6 CP	Terzidis
T-WIWI-111109	KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics	4,5 CP	Weinhardt
T-WIWI-113849	AI Innovation Ecosystems	3 CP	Beyer, Scheydt
T-WIWI-107043	Liberalised Power Markets	5,5 CP	Fichtner
T-WIWI-113107	Life Cycle Assessment – Basics and Application Possibilities in an Industrial Context	3,5 CP	Schultmann
T-WIWI-102870	Logistics and Supply Chain Management	3,5 CP	Schultmann
T-WIWI-113073	Machine Learning and Optimization in Energy Systems	3,5 CP	Fichtner
T-WIWI-102800	Management Accounting 1	4,5 CP	Wouters
T-WIWI-102801	Management Accounting 2	4,5 CP	Wouters
T-WIWI-102612	Managing New Technologies	3 CP	Reiß
T-WIWI-111594	Management and Marketing	5 CP	Klarmann, Lindstädt, Nieken, Terzidis
T-WIWI-107720	Market Research	4,5 CP	Klarmann
T-WIWI-103139	Marketing Analytics	4,5 CP	Klarmann
T-WIWI-102805	Managing the Marketing Mix	4,5 CP	Klarmann
T-WIWI-102835	Marketing Strategy Business Game	1,5 CP	Klarmann
T-WIWI-112711	Media Management	4,5 CP	Kupfer
T-WIWI-113414	Modeling the Dynamics of Financial Markets	9 CP	Ulrich
T-WIWI-111848	Online Concepts for Karlsruhe City Retailers	3 CP	Klarmann
T-WIWI-102597	Operative CRM	4,5 CP	Geyer-Schulz
T-WIWI-102630	Managing Organizations	3,5 CP	Lindstädt
T-WIWI-114184	Pioneering Leadership in German SMEs	3 CP	Schulz-Kamm
T-WIWI-108016	Simulation Game in Energy Economics	3,5 CP	Genoese
T-WIWI-112823	Platform & Market Engineering: Commerce, Media, and Digital Democracy	4,5 CP	Weinhardt
T-WIWI-107506	Platform Economy	4,5 CP	Weinhardt
T-WIWI-109935	Practical Seminar Interaction	4,5 CP	Mädche, Weinhardt
T-WIWI-109937	Practical Seminar Platforms	4,5 CP	Satzger, Weinhardt
T-WIWI-109939	Practical Seminar Servitization	4,5 CP	Mädche, Satzger
T-WIWI-112152	Practical Seminar: Artificial Intelligence in Service Systems	4,5 CP	Satzger
T-WIWI-110888	Practical Seminar: Digital Services	4,5 CP	Satzger
T-WIWI-113459	Practical Seminar: Human-Centered Systems	4,5 CP	Mädche
T-WIWI-111914	Practical Seminar: Interactive Systems	4,5 CP	Mädche

T-WIWI-112154	Practical Seminar: Platform Economy	4,5 CP	Weinhardt
T-WIWI-110887	Practical Seminar: Service Innovation	4,5 CP	Satzger
T-WIWI-105946	Price Management	4,5 CP	Geyer-Schulz, Glenn
T-WIWI-102883	Pricing	4,5 CP	Klarmann
T-WIWI-102603	Principles of Insurance Management	4,5 CP	Werner
T-WIWI-102871	Problem Solving, Communication and Leadership	2 CP	Lindstädt
T-WIWI-111632	Production and Logistics	3 CP	Fichtner, Nickel, Schultmann
T-WIWI-102820	Production Economics and Sustainability	3,5 CP	Schultmann, Volk
T-WIWI-111602	Production, Logistics and Information Systems	5 CP	Fichtner, Geyer-Schulz, Mädche, Nickel, Schultmann, Weinhardt
T-WIWI-102632	Production and Logistics Management	5,5 CP	Schultmann
T-WIWI-103134	Project Management	3,5 CP	Schultmann
T-WIWI-107446	Quantitative Methods in Energy Economics	3,5 CP	Plötz
T-WIWI-102744	Real Estate Management I	4,5 CP	Lützkendorf
T-WIWI-102745	Real Estate Management II	4,5 CP	Lützkendorf
T-WIWI-102816	Financial Accounting and Cost Accounting	4 CP	Strych
T-WIWI-102847	Recommender Systems	4,5 CP	Geyer-Schulz
T-WIWI-100806	Renewable Energy-Resources, Technologies and Economics	3,5 CP	Jochem
T-WIWI-111385	Responsible Artificial Intelligence	4,5 CP	Hoffmann, Pfeiffer
T-WIWI-102649	Risk Communication	4,5 CP	Werner
T-WIWI-102826	Risk Management in Industrial Supply Networks	3,5 CP	Schultmann
T-WIWI-103486	Seminar in Business Administration (Bachelor)	3 CP	Professorenschaft des Fachbereichs Betriebswirtschaftslehre
T-WIWI-103474	Seminar in Business Administration A (Master)	3 CP	Professorenschaft des Fachbereichs Betriebswirtschaftslehre
T-WIWI-103476	Seminar in Business Administration B (Master)	3 CP	Professorenschaft des Fachbereichs Betriebswirtschaftslehre
T-WIWI-110987	Seminar Methods along the Innovation process	3 CP	Beyer
T-WIWI-106563	Practical Seminar Digital Service Systems	4,5 CP	Satzger
T-WIWI-108765	Practical Seminar: Advanced Analytics	4,5 CP	Weinhardt
T-WIWI-106207	Practical Seminar: Data-Driven Information Systems	4,5 CP	Satzger, Weinhardt
T-WIWI-102849	Service Design Thinking	9 CP	Satzger, Terzidis
T-WIWI-107464	Smart Energy Infrastructure	5,5 CP	Ardone, Pustisek
T-WIWI-107504	Smart Grid Applications	4,5 CP	Weinhardt
T-WIWI-113935	Social Dimensions of Energy Transitions	3,5 CP	Fichtner
T-WIWI-109940	Special Topics in Information Systems	4,5 CP	Weinhardt
T-WIWI-113723	Special Topics in Information Systems	4,5 CP	Weinhardt
T-WIWI-113724	Special Topics in Information Systems	4,5 CP	Weinhardt
T-WIWI-113726	Special Topics in Information Systems	4,5 CP	Weinhardt
T-WIWI-113725	Special Topics in Information Systems	4,5 CP	Weinhardt
T-WIWI-111561	Startup Experience	6 CP	Terzidis
T-WIWI-106190	Strategy and Management Theory: Developments and “Classics”	3 CP	Lindstädt
T-WIWI-113090	Strategic Management	3,5 CP	Lindstädt
T-WIWI-102763	Supply Chain Management with Advanced Planning Systems	3,5 CP	Bosch, Göbelt
T-WIWI-110968	Team Project Management and Technology	9 CP	Klarmann, Mädche
T-WIWI-110977	Team Project Management and Technology (BUS/ENG)	9 CP	Klarmann, Mädche
T-WIWI-102621	Valuation	4,5 CP	Ruckes
T-WIWI-102695	Heat Economy	3,5 CP	Fichtner
T-WIWI-106188	Workshop Current Topics in Strategy and Management	3 CP	Lindstädt
T-WIWI-106189	Workshop Business Wargaming – Analyzing Strategic Interactions	3 CP	Lindstädt

M 2.2 Module: Economics [M-WIWI-104908]

Responsible: Professorenschaft des Fachbereichs Volkswirtschaftslehre
Organisation: KIT Department of Economics and Management
Part of: KIT-Department of Economics and Management Courses

Credits	Grading	Recurrence	Duration	Language	Level	Version
45 CP	pass/fail	Each term	1 term	German	4	6

Elective Courses on Economics (Election: at most 45 credits)			
T-WIWI-102861	Advanced Game Theory	4,5 CP	Ehrhart, Puppe, Reiß
T-WIWI-102609	Advanced Topics in Economic Theory	4,5 CP	Brumm, Mitusch
T-WIWI-102876	Auction & Mechanism Design	4,5 CP	Rosar
T-WIWI-109194	Dynamic Macroeconomics	4,5 CP	Brumm
T-WIWI-102892	Economics and Behavior	4,5 CP	Szech
T-WIWI-102877	Introduction to Public Finance	4,5 CP	Wigger
T-WIWI-102850	Introduction to Game Theory	4,5 CP	Puppe, Reiß
T-WIWI-103213	Basic Principles of Economic Policy	4,5 CP	Ott
T-WIWI-112816	Growth and Development	4,5 CP	Ott
T-WIWI-111304	Fundamentals of National and International Group Taxation	4,5 CP	Wigger
T-WIWI-105781	Incentives in Organizations	4,5 CP	Nieken
T-WIWI-102844	Industrial Organization	4,5 CP	Reiß
T-WIWI-109121	Macroeconomic Theory	4,5 CP	Brumm
T-WIWI-113264	Matching Theory	4,5 CP	Puppe
T-WIWI-114054	Methods in Economics	1,5 CP	Ott
T-WIWI-102739	Public Revenues	4,5 CP	Wigger
T-WIWI-102862	Predictive Mechanism and Market Design	4,5 CP	Reiß
T-WIWI-102740	Public Management	4,5 CP	Wigger
T-WIWI-102712	Regulation Theory and Practice	4,5 CP	Mitusch
T-WIWI-102789	Seminar in Economic Policy	3 CP	Ott
T-WIWI-103487	Seminar in Economics (Bachelor)	3 CP	Professorenschaft des Fachbereichs Volkswirtschaftslehre
T-WIWI-103478	Seminar in Economics A (Master)	3 CP	Professorenschaft des Fachbereichs Volkswirtschaftslehre
T-WIWI-103477	Seminar in Economics B (Master)	3 CP	Professorenschaft des Fachbereichs Volkswirtschaftslehre
T-WIWI-102859	Social Choice Theory	4,5 CP	Puppe
T-WIWI-103107	Spatial Economics	4,5 CP	Ott
T-WIWI-113147	Telecommunications and Internet – Economics and Policy	4,5 CP	Mitusch
T-WIWI-102863	Topics in Experimental Economics	4,5 CP	Reiß
T-WIWI-100007	Transport Economics	4,5 CP	Mitusch, Szimba
T-WIWI-102616	Environmental and Resource Policy	4 CP	Walz
T-WIWI-102615	Environmental Economics and Sustainability	3 CP	Walz
T-WIWI-102708	Economics I: Microeconomics	5 CP	Puppe, Reiß
T-WIWI-102709	Economics II: Macroeconomics	5 CP	Wigger
T-WIWI-102736	Economics III: Introduction in Econometrics	5 CP	Schienle
T-WIWI-100005	Competition in Networks	4,5 CP	Mitusch
T-WIWI-102610	Welfare Economics	4,5 CP	Puppe

Prerequisites
None

M 2.3 Module: Engineering Sciences [M-WIWI-104907]

Responsible: Professorenschaft des Fachbereichs Ingenieurwissenschaften
Organisation: KIT Department of Economics and Management
Part of: Other KIT-Departments Courses and Interdisciplinary Qualifications

Credits	Grading	Recurrence	Duration	Language	Level	Version
60 CP	pass/fail	Each term	1 term	German	4	11

Elective Courses on Engineering Sciences (Election: at most 60 credits)			
T-MACH-105173	Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines	4 CP	Gohl
T-MACH-102176	Current Topics on BioMEMS	4 CP	Guber
T-MACH-102141	Constitution and Properties of Wearresistant Materials	4 CP	Ulrich
T-MACH-105150	Constitution and Properties of Protective Coatings	4 CP	Ulrich
T-MACH-102160	Selected Applications of Technical Logistics	4 CP	Milushev, Mittwollen
T-MACH-108945	Selected Applications of Technical Logistics - Project	2 CP	Milushev, Mittwollen
T-MACH-102162	Automated Manufacturing Systems	9 CP	Fleischer
T-MACH-102143	Rail System Technology	9 CP	Cichon
T-BGU-101691	Construction Technology	6 CP	Haghsheno
T-BGU-103427	Site Management	1,5 CP	Haghsheno
T-BGU-106613	Design Basics in Highway Engineering	3 CP	Zimmermann
T-BGU-101797	Methods and Models in Transportation Planning	3 CP	Vortisch
T-BGU-101860	Special Topics in Highway Engineering and Environmental Impact Assessment	3 CP	Zimmermann
T-MACH-105184	Fuels and Lubricants for Combustion Engines	4 CP	Kehrwald
T-MACH-100966	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I	4 CP	Guber
T-MACH-100967	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II	4 CP	Guber
T-MACH-100968	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III	4 CP	Guber
T-ETIT-104572	Business Innovation in Optics and Photonics	4 CP	Nahm
T-MACH-102185	CATIA CAD Training Course	2 CP	Ovtcharova
T-MACH-102187	CAD-NX Training Course	2 CP	Ovtcharova
T-ETIT-101938	Communication Systems and Protocols	5 CP	Becker, Becker
T-MACH-112126	Data-Driven Algorithms in Vehicle Technology	4 CP	Scheubner
T-MACH-113647	Digitalization from Product Concept to Production	4 CP	Wawerla
T-BGU-101804	IT-Based Road Design	3 CP	Zimmermann
T-BGU-106609	Characteristics of Transportation Systems	3 CP	Vortisch
T-MACH-111807	Introduction to Bionics	4 CP	Hölscher
T-BGU-101499	Introduction to Hydrogeology	5 CP	Goldscheider
T-BGU-101500	Introduction to Engineering Geology	5 CP	Blum
T-MACH-111814	Introduction to Nanotechnology	4 CP	Hölscher
T-MACH-102208	Introduction to Engineering Mechanics I: Statics and Strength of Materials	5 CP	Fidlin
T-MACH-102210	Introduction to Engineering Mechanics II : Dynamics	5 CP	Fidlin
T-BGU-101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences	3 CP	Wursthorn
T-BGU-103541	Introduction to GIS for Students of Natural, Engineering and Geo Sciences, Prerequisite	3 CP	Wursthorn
T-ETIT-110883	Electric Power Transmission & Grid Control	6 CP	Leibfried
T-ETIT-100830	Power Network	5 CP	Leibfried

T-ETIT-112850	Electric Energy Systems	6 CP	Hiller, Leibfried
T-ETIT-100533	Electrical Engineering for Business Engineers, Part I	3 CP	Menesklou
T-ETIT-100534	Electrical Engineering for Business Engineers, Part II	5 CP	Menesklou
T-MACH-102159	Elements and Systems of Technical Logistics	4 CP	Fischer, Mittwollen
T-MACH-108946	Elements and Systems of Technical Logistics - Project	2 CP	Fischer, Mittwollen
T-BGU-100010	Transportation Data Analysis	3 CP	Kagerbauer
T-MACH-102211	Energy and Process Technology I	9 CP	Bauer, Maas, Schwitzke, Velji
T-MACH-102212	Energy and Process Technology II	9 CP	Maas, Schwitzke
T-MACH-105151	Energy Efficient Intralogistic Systems	4 CP	Kramer, Schönung
T-MACH-105564	Energy Conversion and Increased Efficiency in Internal Combustion Engines	4 CP	Koch, Kubach
T-BGU-101801	Operation Methods for Earthmoving	1,5 CP	Schlick
T-ETIT-101924	Power Generation	3 CP	Hoferer
T-MACH-102099	Experimental Lab Class in Welding Technology, in Groups	4 CP	Dietrich
T-MACH-105152	Handling Characteristics of Motor Vehicles I	4 CP	Unrau
T-MACH-105153	Handling Characteristics of Motor Vehicles II	4 CP	Unrau
T-MACH-102207	Tires and Wheel Development for Passenger Cars	4 CP	Leister
T-BGU-106301	Long-Distance and Air Traffic	3 CP	Vortisch
T-BGU-101636	Remote Sensing, Exam	4 CP	Cermak, Hinz, Weidner
T-BGU-101637	Systems of Remote Sensing, Prerequisite	1 CP	Cermak, Hinz, Weidner
T-BGU-103542	Procedures of Remote Sensing	3 CP	Weidner
T-BGU-101638	Procedures of Remote Sensing, Prerequisite	1 CP	Weidner
T-MACH-102166	Fabrication Processes in Microsystem Technology	4 CP	Bade
T-MACH-102105	Manufacturing Technology	8 CP	Schulze
T-MACH-102197	Gas Engines	4 CP	Golloch, Kubach
T-MACH-105157	Foundry Technology	4 CP	Günther, Klan
T-MACH-111003	Global Logistics	4 CP	Furmans
T-MACH-113832	Global Production	5 CP	Lanza
T-MACH-100092	Automotive Engineering I	8 CP	Gießler
T-MACH-102117	Automotive Engineering II	4 CP	Gießler
T-MACH-105379	Global Logistics	4 CP	Furmans
T-MACH-102111	Principles of Ceramic and Powder Metallurgy Processing	4 CP	Schell
T-MACH-105044	Fundamentals of Catalytic Exhaust Gas Aftertreatment	4 CP	Deutschmann, Grunwaldt, Kubach, Lox
T-CIWVT-101874	Principles of Food Process Engineering	9 CP	Gaukel
T-MACH-102116	Fundamentals for Design of Motor-Vehicle Bodies I	2 CP	Bardehle
T-MACH-102119	Fundamentals for Design of Motor-Vehicle Bodies II	2 CP	Bardehle
T-MACH-111389	Fundamentals in the Development of Commercial Vehicles	4 CP	Weber
T-MACH-114075	Principles of Whole Vehicle Engineering	4 CP	Harrer
T-BGU-106611	Freight Transport	3 CP	Szimba, Vortisch
T-ETIT-101915	High-Voltage Test Technique	4 CP	Badent
T-ETIT-101913	High-Voltage Technology I	4 CP	Badent
T-ETIT-101914	High-Voltage Technology II	4 CP	Badent
T-BGU-101693	Hydrology	4 CP	Zehe
T-MACH-102209	Information Engineering	3 CP	Meyer, Ovtcharova
T-BGU-106608	Information Management for Public Mobility Services	3 CP	Vortisch
T-MACH-102128	Information Systems and Supply Chain Management	3 CP	Kilger
T-BGU-106300	Infrastructure Management	6 CP	Zimmermann
T-BGU-108943	Engineering Hydrology	3 CP	Ehret
T-MACH-112882	Innovation2Business – Innovation Strategy in the Industrial Corporate Practice	4 CP	Albers

T-MACH-105188	Integrative Strategies in Production and Development of High Performance Cars	4 CP	Schlichtenmayer
T-MACH-105401	Integrated Product Development	16 CP	Albers
T-MACH-109054	Integrated Production Planning in the Age of Industry 4.0	9 CP	Lanza
T-CIWVT-103704	International Concepts of Water Technologies	5 CP	Schäfer
T-MACH-114100	Introduction to Microsystem Technology I	4 CP	Badilita, Korvink
T-MACH-114101	Introduction to Microsystem Technology II	4 CP	Badilita, Korvink
T-MACH-106743	IoT Platform for Engineering	4 CP	Ovtcharova
T-MACH-105187	IT-Fundamentals of Logistics	4 CP	Thomas
T-MACH-106457	I4.0 Systems Platform	4 CP	Maier, Ovtcharova
T-MACH-100287	Introduction to Ceramics	6 CP	Schell
T-MACH-102182	Ceramic Processing Technology	4 CP	Binder
T-MACH-108312	Introduction to Microsystem Technology - Practical Course	3 CP	Last
T-MACH-105174	Warehousing and Distribution Systems	4 CP	Furmans
T-MACH-112763	Laser Material Processing	4 CP	Schneider
T-ETIT-100741	Laser Physics	4 CP	Eichhorn
T-MACH-105164	Laser in Automotive Engineering	4 CP	Schneider
T-BGU-108000	Lean Construction	4,5 CP	Haghsheno
T-MACH-105783	Learning Factory “Global Production“	6 CP	Lanza
T-MACH-110771	Logistics and Supply Chain Management	9 CP	Furmans
T-MACH-104739	Mechanical Design I and II - CIW	6 CP	Matthiesen
T-MACH-102132	Mechanical Design I, Tutorial	1 CP	Matthiesen
T-MACH-102133	Mechanical Design II, Tutorial	1 CP	Matthiesen
T-BGU-101845	Construction Equipment	3 CP	Gentes
T-MACH-105189	Mathematical Models and Methods for Production Systems	6 CP	Baumann, Furmans
T-MACH-112647	Mechatronical Systems and Products	4 CP	Hohmann, Matthiesen
T-ETIT-112852	Measurement and Control Technology	6 CP	Heizmann, Hohmann
T-MACH-105167	Analysis Tools for Combustion Diagnostics	4 CP	Pfeil
T-MACH-105557	Microenergy Technologies	4 CP	Kohl, Xu
T-MACH-101910	Microactuators	4 CP	Kohl
T-BGU-103425	Mobility Services and New Forms of Mobility	3 CP	Kagerbauer
T-MACH-102199	Model Based Application Methods	4 CP	Kirschbaum
T-ETIT-100699	Modelling and Identification	4 CP	Hohmann
T-BGU-101859	Morphodynamics	3 CP	Rodrigues Pereira da Franca
T-MACH-105169	Engine Measurement Techniques	4 CP	Bernhardt
T-MACH-111859	Sustainable Production Economics	5 CP	Furmans, Lanza
T-MACH-102167	Nanotribology and -Mechanics	4 CP	Dienwiebel, Hölscher
T-MACH-102152	Novel Actuators and Sensors	4 CP	Kohl, Sommer
T-ETIT-100639	Optical Transmitters and Receivers	6 CP	Freude
T-ETIT-101945	Optical Waveguides and Fibers	4 CP	Koos
T-ETIT-101907	Optoelectronic Components	4 CP	Randel
T-MACH-105442	Intellectual Property Rights and Strategies in Industrial Companies	4 CP	Zacharias
T-ETIT-100724	Photovoltaic System Design	3 CP	Grab
T-MACH-100530	Physics for Engineers	5 CP	Dienwiebel, Gumbsch, Nesterov-Müller, Weygand
T-MACH-102102	Physical Basics of Laser Technology	5 CP	Schneider
T-MACH-102181	PLM for Product Development in Mechatronics	4 CP	Eigner
T-MACH-102153	PLM-CAD Workshop	4 CP	Ovtcharova
T-MACH-102137	Polymer Engineering I	4 CP	Liebig
T-MACH-102138	Polymer Engineering II	4 CP	Liebig
T-MACH-102192	Polymers in MEMS A: Chemistry, Synthesis and Applications	4 CP	Worgull

T-MACH-102191	Polymers in MEMS B: Physics, Microstructuring and Applications	4 CP	Worgull
T-MACH-102200	Polymers in MEMS C: Biopolymers and Bioplastics	4 CP	Worgull
T-MACH-105556	Practical Course Polymers in MEMS	2 CP	Worgull
T-MACH-105178	Practical Course Technical Ceramics	4 CP	Schell
T-MACH-102154	Laboratory Laser Materials Processing	4 CP	Schneider
T-MACH-108878	Laboratory Production Metrology	4 CP	Lanza, Stamer
T-MACH-102164	Practical Training in Basics of Microsystem Technology	4 CP	Last
T-MACH-105147	Product Lifecycle Management	4 CP	Ovtcharova
T-MACH-110318	Product- and Production-Concepts for Modern Automobiles	4 CP	Kienzle, Steegmüller
T-MACH-110984	Production Technology for E-Mobility	4 CP	Fleischer
T-MACH-109062	Seminar Production Technology	3 CP	Fleischer, Lanza, Schulze
T-MACH-102156	Project Workshop: Automotive Engineering	6 CP	Frey, Gießler
T-BGU-101007	Project Paper Lean Construction	1,5 CP	Haghsheno
T-BGU-103432	Project Management in Construction and Real Estate Industry I	3 CP	Haghsheno
T-BGU-103433	Project Management in Construction and Real Estate Industry II	3 CP	Haghsheno
T-BGU-101847	Project Studies	3 CP	Gentes
T-BGU-101814	Project in Applied Remote Sensing	1 CP	Hinz, Weidner
T-BGU-113454	Examination Prerequisite Project Management	0 CP	Haghsheno
T-MACH-102157	High Performance Powder Metallurgy Materials	4 CP	Schell
T-MACH-110796	Python Algorithms for Vehicle Technology	4 CP	Rhode
T-MACH-102107	Quality Management	4 CP	Lanza
T-ETIT-100740	Quantum Functional Devices and Semiconductor Technology	3 CP	Koos
T-ETIT-100666	Control of Linear Multivariable Systems	6 CP	Kluwe
T-MACH-109122	X-ray Optics	4 CP	Last
T-MACH-105170	Welding Technology	4 CP	Farajian
T-MACH-108737	Seminar Data-Mining in Production	3 CP	Lanza
T-WIWI-108763	Seminar in Engineering Science Master (approval)	3 CP	Fachvertreter ingenieurwissenschaftlicher Fakultäten
T-ETIT-100707	Seminar Sensors	3 CP	Menesklou
T-BGU-100014	Seminar in Transportation	3 CP	Kagerbauer, Vortisch
T-ETIT-100754	Seminar Creating a Patent Specification	3 CP	Stork
T-ETIT-101911	Sensors	3 CP	Menesklou
T-ETIT-100709	Sensor Systems	3 CP	Menesklou
T-BGU-101674	Safety Management in Highway Engineering	3 CP	Zimmermann
T-MACH-105171	Safety Engineering	4 CP	Kany
T-MACH-105172	Simulation of Coupled Systems	4 CP	Geimer
T-MACH-108888	Simulation of Coupled Systems - Advance	0 CP	Geimer
T-BGU-101800	Traffic Flow Simulation	3 CP	Vortisch
T-MACH-106493	Solar Thermal Energy Systems	4 CP	Dagan
T-MACH-111821	Control of Mobile Machines	4 CP	Becker, Geimer
T-MACH-111820	Control of Mobile Machines – Prerequisites	0 CP	Becker, Geimer
T-MACH-105185	Control Technology	4 CP	Gönnheimer
T-BGU-101798	Traffic Engineering	3 CP	Vortisch
T-BGU-103426	Strategic Transport Planning	3 CP	Waßmuth
T-MACH-102170	Structural and Phase Analysis	4 CP	Wagner
T-MACH-102103	Superhard Thin Film Materials	4 CP	Ulrich
T-MACH-100531	Systematic Materials Selection	4 CP	Dietrich, Schulze
T-BGU-101832	Operation Methods for Foundation and Marine Construction	1,5 CP	Schneider
T-BGU-101846	Tunnel Construction and Blasting Engineering	3 CP	Haghsheno
T-BGU-113671	Exercise Transportation Data Analysis	0 CP	Kagerbauer
T-BGU-113971	Exercise Transportation Data Analysis	0 CP	Vortisch
T-MACH-105177	Metal Forming	4 CP	Herlan

T-MACH-102194	Combustion Engines I	4 CP	Koch, Kubach
T-MACH-104609	Combustion Engines II	5 CP	Koch, Kubach
T-BGU-101844	Process Engineering	3 CP	Schneider
T-BGU-101850	Disassembly Process Engineering	3 CP	Gentes
T-CIWVT-106058	Process Fundamentals by the Example of Food Production	3 CP	Gaukel
T-BGU-106615	Laws concerning Traffic and Roads	3 CP	Hönig
T-BGU-101799	Traffic Management and Transport Telematics	3 CP	Vortisch
T-BGU-106610	Transportation Systems	3 CP	Vortisch
T-MACH-102139	Failure of Structural Materials: Fatigue and Creep	4 CP	Gruber, Gumbsch
T-MACH-102140	Failure of Structural Materials: Deformation and Fracture	4 CP	Gumbsch, Weygand
T-MACH-102148	Gear Cutting Technology	4 CP	Klaiber
T-MACH-102123	Virtual Engineering I	4 CP	Ovtcharova
T-MACH-102124	Virtual Engineering II	4 CP	Ovtcharova
T-MACH-106740	Virtual Engineering Lab	4 CP	Ovtcharova
T-MACH-102149	Virtual Reality Practical Course	4 CP	Ovtcharova
T-MACH-106741	Virtual Training Factory 4.X	4 CP	Ovtcharova
T-BGU-101667	Hydraulic Engineering and Water Management	4 CP	Rodrigues Pereira da Franca
T-CIWVT-101900	Water Chemistry and Water Technology I	6 CP	Horn
T-CIWVT-103351	Laboratory Work Water Chemistry	4 CP	Abbt-Braun, Horn
T-MACH-102078	Materials Science I	3 CP	Wagner
T-MACH-102079	Material Science II for Business Engineers	5 CP	Wagner
T-MACH-110963	Machine Tools and High-Precision Manufacturing Systems	9 CP	Fleischer
T-BGU-101005	Tendering, Planning and Financing in Public Transport	3 CP	Vortisch
T-MACH-105234	Windpower	4 CP	Lewald
T-MACH-112648	Workshop Mechatronical Systems and Products	5 CP	Hohmann, Matthiesen

M 2.4 Module: Informatics (Department of Informatics) [M-WIWI-104909]

Responsible: Professorenschaft des Fachbereichs Informatik (KIT-Fakultät für Informatik)
Organisation: KIT Department of Economics and Management
Part of: Other KIT-Departments Courses and Interdisciplinary Qualifications

Credits	Grading	Recurrence	Duration	Language	Level	Version
30 CP	pass/fail	Each term	1 term	German	4	3

Elective Courses on Informatics (Election: at most 30 credits)			
T-INFO-100001	Algorithms I	6 CP	Bläsius
T-INFO-102020	Algorithms II	6 CP	Sanders
T-INFO-101305	Big Data Analytics	5 CP	Böhm
T-INFO-101317	Deployment of Database Systems	5 CP	Böhm
T-INFO-108405	Data Protection by Design	3 CP	Raabe
T-INFO-112344	Introduction to Quantum Computing (IQC)	3 CP	Beckert, Schaefer
T-INFO-101337	Internet of Everything	4 CP	Zitterbart
T-INFO-101323	IT-Security Management for Networked Systems	5 CP	Hartenstein
T-INFO-107499	Context Sensitive Systems	5 CP	Beigl
T-INFO-101344	Low Power Design	3 CP	Henkel
T-INFO-101266	Human-Machine-Interaction	6 CP	Beigl
T-INFO-106257	Human-Machine-Interaction Pass	0 CP	Beigl
T-INFO-101345	Parallel Computer Systems and Parallel Programming	4 CP	Streit
T-INFO-101531	Programming	5 CP	Koziolek, Reussner
T-INFO-101967	Programming Pass	0 CP	Koziolek, Reussner
T-INFO-101319	Network Security: Architectures and Protocols	4 CP	Zitterbart
T-INFO-103531	Computer Organization	6 CP	Karl
T-INFO-111255	Reinforcement Learning	6 CP	Lioutikov, Neumann
T-INFO-101300	Requirements Engineering	3 CP	Koziolek
T-INFO-101381	Software Architecture and Quality	3 CP	Reussner
T-INFO-101326	Ubiquitous Computing	5 CP	Beigl
T-INFO-102047	Seminar: Governance, Risk & Compliance	3 CP	Dreier
T-INFO-101271	Web Applications and Service-Oriented Architectures (II)	4 CP	Abeck

M 2.5 Module: Informatics (KIT-Department of Economics and Management) [M-WIWI-104901]

Responsible: Professorenschaft des Instituts AIFB
Organisation: KIT Department of Economics and Management
Part of: KIT-Department of Economics and Management Courses

Credits	Grading	Recurrence	Duration	Language	Level	Version
55 CP	pass/fail	Each term	1 term	German	4	14

Elective Courses on Informatics (Election: at most 55 credits)			
T-WIWI-110340	Applied Informatics – Applications of Artificial Intelligence	4,5 CP	Käfer
T-WIWI-114156	Applied Informatics – Cybersecurity	4,5 CP	Volkamer
T-WIWI-110341	Applied Informatics – Database Systems	4,5 CP	Oberweis
T-WIWI-110339	Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services	4,5 CP	Sunyaev
T-WIWI-113957	Applied Informatics – Mobile Computing	4,5 CP	Oberweis
T-WIWI-110338	Applied Informatics – Modelling	4,5 CP	Oberweis
T-WIWI-110343	Applied Informatics – Software Engineering	4,5 CP	Oberweis
T-WIWI-102680	Computational Economics	4,5 CP	Shukla
T-WIWI-112690	Cooperative Autonomous Vehicles	4,5 CP	Vinel
T-WIWI-113363	Collective Perception in Autonomous Driving	4,5 CP	Vinel
T-WIWI-109248	Critical Information Infrastructures	4,5 CP	Sunyaev
T-WIWI-102661	Database Systems and XML	4,5 CP	Oberweis
T-WIWI-109246	Digital Health	4,5 CP	Sunyaev
T-WIWI-110144	Emerging Trends in Digital Health	4,5 CP	Sunyaev
T-WIWI-110143	Emerging Trends in Internet Technologies	4,5 CP	Sunyaev
T-WIWI-109249	Sociotechnical Information Systems Development	4,5 CP	Sunyaev
T-WIWI-110346	Supplement Enterprise Information Systems	4,5 CP	Oberweis
T-WIWI-110372	Supplement Software- and Systemsengineering	4,5 CP	Oberweis
T-WIWI-102749	Foundations of Informatics I	5 CP	Käfer
T-WIWI-102707	Foundations of Informatics II	5 CP	Lazarova-Molnar
T-WIWI-113059	Human Factors in Autonomous Driving	4,5 CP	Vinel
T-WIWI-109270	Human Factors in Security and Privacy	4,5 CP	Volkamer
T-WIWI-106423	Information Service Engineering	4,5 CP	Sack
T-WIWI-113968	Management of IT-Projects	4,5 CP	Alpers
T-WIWI-102666	Knowledge Discovery	4,5 CP	Käfer
T-WIWI-108716	Interdisciplinary Approach to Verifiable e-Voting	4,5 CP	Volkamer
T-WIWI-106340	Machine Learning 1 - Basic Methods	4,5 CP	Zöllner
T-WIWI-106341	Machine Learning 2 - Advanced Methods	4,5 CP	Zöllner
T-WIWI-112685	Modeling and Simulation	4,5 CP	Lazarova-Molnar
T-WIWI-102697	Business Process Modelling	4,5 CP	Oberweis
T-WIWI-102679	Nature-Inspired Optimization Methods	4,5 CP	Shukla
T-WIWI-111127	Advanced Lab Blockchain Hackathon (Bachelor)	4,5 CP	Sunyaev
T-WIWI-111126	Advanced Lab Blockchain Hackathon (Master)	4,5 CP	Sunyaev
T-WIWI-111124	Advanced Lab Sociotechnical Information Systems Development (Bachelor)	4,5 CP	Sunyaev
T-WIWI-111125	Advanced Lab Sociotechnical Information Systems Development (Master)	4,5 CP	Sunyaev
T-WIWI-110541	Advanced Lab Informatics (Bachelor)	4,5 CP	Professorenschaft des Instituts AIFB
T-WIWI-110548	Advanced Lab Informatics (Master)	4,5 CP	Professorenschaft des Instituts AIFB

T-WIWI-112915	Advanced Lab Realization of Innovative Services (Bachelor)	4,5 CP	Oberweis
T-WIWI-112914	Advanced Lab Realization of Innovative Services (Master)	4,5 CP	Oberweis
T-WIWI-108439	Advanced Lab Security, Usability and Society	4,5 CP	Volkamer
T-WIWI-109799	Process Mining	4,5 CP	Oberweis
T-WIWI-102735	Introduction to Programming with Java	5 CP	Zöllner
T-WIWI-102747	Advanced Programming - Java Network Programming	4,5 CP	Ratz, Zöllner
T-WIWI-102748	Advanced Programming - Application of Business Software	4,5 CP	Klink, Oberweis
T-WIWI-109985	Project Lab Cognitive Automobiles and Robots	5 CP	Zöllner
T-WIWI-109983	Project Lab Machine Learning	5 CP	Zöllner
T-WIWI-110848	Semantic Web Technologies	4,5 CP	Käfer
T-WIWI-103485	Seminar in Informatics (Bachelor)	3 CP	Professorenschaft des Instituts AIFB
T-WIWI-103479	Seminar in Informatics A (Master)	3 CP	Professorenschaft des Instituts AIFB
T-WIWI-103480	Seminar in Informatics B (Master)	3 CP	Professorenschaft des Instituts AIFB
T-WIWI-100809	Software Engineering	4 CP	Oberweis
T-WIWI-102895	Software Quality Management	4,5 CP	Oberweis
T-WIWI-113026	Trustworthy Emerging Technologies	4,5 CP	Sunyaev
T-WIWI-110108	Visual Computing	4,5 CP	Landesberger von Antburg

M 2.6 Module: Interdisciplinary Qualifications [M-WIWI-104910]

Responsible: Studiendekan des KIT-Studienganges
Organisation: KIT Department of Economics and Management
Part of: Other KIT-Departments Courses and Interdisciplinary Qualifications

Credits	Grading	Recurrence	Duration	Language	Level	Version
40 CP	pass/fail	Each term	1 term	German	4	5

Interdisciplinary Qualifications (Election: at most 40 credits)			
T-INFO-109862	Guide to Cruising through Informatics Program of Studies at KIT (eezi) *This item will not influence the grade calculation of this parent.*	1 CP	Beckert, Glaubitz
T-WIWI-112967	Tutoring: Training and Practice *This item will not influence the grade calculation of this parent.*	2 CP	
T-WIWI-111438	Self-Booking-HOC-SPZ-FORUM-STK-Graded *This item will not influence the grade calculation of this parent.*	1 CP	
T-WIWI-111439	Self-Booking-HOC-SPZ-FORUM-STK-Graded *This item will not influence the grade calculation of this parent.*	2 CP	
T-WIWI-111440	Self-Booking-HOC-SPZ-FORUM-STK-Graded *This item will not influence the grade calculation of this parent.*	3 CP	
T-WIWI-113352	Self-Booking-HOC-SPZ-FORUM-STK-Graded *This item will not influence the grade calculation of this parent.*	1 CP	
T-WIWI-113353	Self-Booking-HOC-SPZ-FORUM-STK-Graded *This item will not influence the grade calculation of this parent.*	2 CP	
T-WIWI-113354	Self-Booking-HOC-SPZ-FORUM-STK-Graded *This item will not influence the grade calculation of this parent.*	3 CP	
T-WIWI-111441	Self-Booking-HOC-SPZ-FORUM-STK-Ungraded *This item will not influence the grade calculation of this parent.*	1 CP	
T-WIWI-111442	Self-Booking-HOC-SPZ-FORUM-STK-Ungraded *This item will not influence the grade calculation of this parent.*	2 CP	
T-WIWI-111443	Self-Booking-HOC-SPZ-FORUM-STK-Ungraded *This item will not influence the grade calculation of this parent.*	3 CP	
T-WIWI-113355	Self-Booking-HOC-SPZ-FORUM-STK-Ungraded *This item will not influence the grade calculation of this parent.*	1 CP	
T-WIWI-113356	Self-Booking-HOC-SPZ-FORUM-STK-Ungraded *This item will not influence the grade calculation of this parent.*	2 CP	
T-WIWI-113357	Self-Booking-HOC-SPZ-FORUM-STK-Ungraded *This item will not influence the grade calculation of this parent.*	3 CP	

M 2.7 Module: Law [M-WIWI-104903]

Responsible: Professorenschaft des Fachbereichs Recht
Organisation: KIT Department of Economics and Management
Part of: Other KIT-Departments Courses and Interdisciplinary Qualifications

Credits	Grading	Recurrence	Duration	Language	Level	Version
40 CP	pass/fail	Each term	1 term	German	4	4

Elective Courses on Law (Election: at most 40 credits)			
T-INFO-111436	Employment Law	3 CP	Hoff
T-INFO-108462	Selected Legal Issues of Internet Law	3 CP	N.N.
T-INFO-103339	Civil Law for Beginners	5 CP	Matz
T-INFO-108405	Data Protection by Design	3 CP	Raabe
T-INFO-101303	Data Protection Law	3 CP	Eichenhofer
T-INFO-101312	European and International Law	3 CP	Brühann
T-INFO-101307	Internet Law	3 CP	N.N.
T-INFO-101313	Trademark and Unfair Competition Law	3 CP	Matz
T-INFO-101311	Public Media Law	3 CP	
T-INFO-110300	Public Law I & II	6 CP	Zufall
T-INFO-101310	Patent Law	3 CP	Werner
T-INFO-102013	Exercises in Civil Law	9 CP	Matz
T-INFO-101288	Corporate Compliance	3 CP	Herzig
T-INFO-101997	Seminar: Legal Studies I	3 CP	N.N.
T-INFO-105945	Seminar: Legal Studies II	3 CP	N.N.
T-INFO-111437	Tax Law	3 CP	Dietrich
T-INFO-101309	Telecommunications Law	3 CP	
T-BGU-111102	Environmental Law	3 CP	Smeddinck
T-INFO-101308	Copyright	3 CP	N.N.
T-INFO-102047	Seminar: Governance, Risk & Compliance	3 CP	Dreier
T-INFO-101316	Law of Contracts	3 CP	Hoff
T-INFO-102036	Computer Contract Law	3 CP	Menk

M 2.8 Module: Mathematics [M-WIWI-104905]

Responsible: Professorenschaft des Fachbereichs Mathematik
Organisation: KIT Department of Economics and Management
Part of: Other KIT-Departments Courses and Interdisciplinary Qualifications

Credits	Grading	Recurrence	Duration	Language	Level	Version
30 CP	pass/fail	Each term	1 term	German	4	2

Elective Courses on Mathematics (Election: at most 30 credits)			
T-MATH-102265	Seminar in Mathematics (Bachelor)	3 CP	Last, Nestmann, Winter
T-MATH-102244	Fundamentals of Probability and Statistics for Students of Computer Science	4,5 CP	Bäuerle, Ebner, Fasen-Hartmann, Hug, Klar, Last, Trabs, Winter
T-MATH-111492	Mathematics I - Midterm Exam	5 CP	Hug, Last, Nestmann, Winter
T-MATH-111493	Mathematics I - Final Exam	5 CP	Hug, Last, Nestmann, Winter
T-MATH-111498	Mathematics III - Final Exam	4 CP	Hug, Last, Nestmann, Winter
T-MATH-111495	Mathematics II - Midterm Exam	3,5 CP	Hug, Last, Nestmann, Winter
T-MATH-111496	Mathematics II - Final Exam	3,5 CP	Hug, Last, Nestmann, Winter

M 2.9 Module: Module Bachelor's Thesis [M-WIWI-101601]

Responsible: Studiendekan des KIT-Studienganges
Organisation: KIT Department of Economics and Management
Part of: Thesis

Credits	Grading	Recurrence	Duration	Language	Level	Version
12 CP	graded	Each term	1 term	German	3	6

Mandatory			
T-WIWI-103067	Bachelor's Thesis	12 CP	Studiendekan des KIT-Studienganges

Assessment
The Bachelor's thesis is a written piece of work that demonstrates that the student is capable of dealing with a problem from their subject in an academic manner. It is regulated in detail in 14 SPO 2015.

The thesis is supervised and assessed by at least two KIT examiners. At least one of the examiners must be a professor and usually an examiner at the KIT Department of Economics and Management

The regular processing time is 6 months. Upon justified request by the student, the examination board can extend the processing time by a maximum of one month. If the Bachelor's thesis is not completed and submitted to the examiner by the deadline, it will be graded as "insufficient" unless the student is not responsible for this failure (e.g. maternity leave).

The Examination Board determines the languages in which the Bachelor's thesis can be written. At the student's request, the examiner may authorize the Bachelor's thesis to be written in a language other than German. The topic can only be returned once and only within the first month of the completion period. A new topic must be submitted and issued within four weeks.

If the thesis is not passed, it may be repeated once. A new topic must be issued. The same topic may not be repeated. This also applies to comparable topics. In case of doubt, the examination board will decide. The new topic may again be supervised by the examiners of the first thesis.

This regulation also applies analogously after an official withdrawal from a registered topic.

The module grade is the grade for the Bachelor's thesis.

Prerequisites
Prerequisites for admission to the Bachelor Thesis: minimum of 120 credits must be earned. All module examinations of the basic program must be passed.

At the request of the student, the examination committee decides on exceptions to these regulations.

It is recommended to begin the Bachelor Thesis in the 5th or 6th Semester.
A written confirmation of the examiner about supervising the Bachelor's Thesis is required.
Please pay regard to the institute specific rules for supervising a Bachelor Thesis.
The Bachelor Thesis has to contain the following declaration in German:

„Ich versichere wahrheitsgemäß, die Arbeit selbstständig verfasst, alle benutzten Hilfsmittel vollständig und genau angegeben und alles kenntlich gemacht zu haben, was aus Arbeiten anderer unverändert oder mit Abänderungen entnommen wurde sowie die Satzung des KIT zur Sicherung guter wissenschaftlicher Praxis in der jeweils gültigen Fassung beachtet zu haben.“

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

Modeled Prerequisites
The following conditions have to be fulfilled:

1. You have to fulfill one of 2 conditions:
    1. You have to fulfill 2 of 3 conditions:
        1. The module M-WIWI-101494 - Fundamentals of Business Administration 1 must have been passed.
        2. The module M-WIWI-101578 - Fundamentals of Business Administration 2 must have been passed.
        3. The module M-WIWI-105828 - Fundamentals of Business Administration 2 must have been passed.
    2. The following conditions have to be fulfilled:
        1. The module M-WIWI-105768 - Management and Marketing must have been passed.
        2. The module M-WIWI-105769 - Financing and Accounting must have been passed.
        3. The module M-WIWI-105770 - Production, Logistics and Information Systems must have been passed.
2. You have to fulfill 3 of 6 conditions:
    1. The module M-MATH-101676 - Mathematics 1 must have been passed.
    2. The module M-MATH-101677 - Mathematics 2 must have been passed.
    3. The module M-MATH-101679 - Mathematics 3 must have been passed.
    4. The module M-MATH-105754 - Mathematics 1 must have been passed.
    5. The module M-MATH-105756 - Mathematics 2 must have been passed.
    6. The module M-MATH-105757 - Mathematics 3 must have been passed.
3. You need to have earned at least 120 credits in the following fields:
4. The module M-WIWI-101398 - Introduction to Economics must have been passed.
5. The module M-WIWI-101417 - Foundations of Informatics must have been passed.
6. The module M-WIWI-101581 - Introduction to Programming must have been passed.
7. The module M-WIWI-101418 - Introduction to Operations Research must have been passed.
8. The module M-MACH-101260 - Materials Science must have been passed.
9. The module M-ETIT-101155 - Electrical Engineering must have been passed.
10. The module M-WIWI-101839 - Additional Fundamentals of Engineering must have been passed.
11. The module M-MACH-101259 - Engineering Mechanics must have been passed.
12. The module M-WIWI-101432 - Introduction to Statistics must have been passed.

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

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

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

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

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

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

Workload
The preparation and presentation of the Bachelor's thesis is expected to take a total of approx. 360 hours. In addition to writing the thesis, this figure includes all necessary activities such as literature research, familiarization with the topic, familiarization with any necessary tools, conducting studies/experiments, supervision meetings, etc.

M 2.10 Module: Module Master's Thesis [M-WIWI-101650]

Responsible: Studiendekan des KIT-Studienganges
Organisation: KIT Department of Economics and Management
Part of: Thesis

Credits	Grading	Recurrence	Duration	Language	Level	Version
30 CP	graded	Each term	1 term	German	4	2

Mandatory			
T-WIWI-103142	Master's Thesis	30 CP	Studiendekan der KIT-Fakultät für Informatik, Studiendekan des KIT-Studienganges

Assessment
The Master's thesis is a written piece of work that demonstrates that the student is able to work on a problem from their subject in an academic manner. It is regulated in detail in § 14 SPO 2015.

At least two KIT examiners supervise and assess the work. At least one of the examiners must be a professor and usually an examiner at the Department of Economics and Management.

The regular completion period is six months. Upon justified request by the student, the Examination Board may extend the completion period by a maximum of three months. If the Master's thesis is not completed and submitted to the examiner by the deadline, it will be assessed as "insufficient", unless the candidate is not responsible for this failure (e.g. maternity leave). In addition to the written work on the topic, a presentation can be agreed as an obligatory and grade-relevant part of the thesis. Depending on the agreement, this can take place before submission or after submission on an agreed date. The preparation time for the presentation does not count towards the processing time for the written part, unless it has been included in the overall workload of the final project.

The thesis may be written in English with the consent of the examiner. Other languages require the consent of the examiner and the approval of the examination board.

The candidate may only return the topic of the Master's thesis once and only within the first month of registration.

If the thesis is not passed, it may be repeated once. A new topic must be issued. The same topic may not be repeated. This also applies to comparable topics. In case of doubt, the examination board will decide. The new topic may again be supervised by the examiners of the first thesis.

This regulation also applies analogously after an official withdrawal from a registered topic.

The module grade is the grade for the Master's thesis.

Prerequisites
Prerequisite for admission to the Master thesis is that 50 percent of the credit points has to be completed.

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

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

The Master Thesis has to contain the following declaration in German:

„Ich versichere wahrheitsgemäß, die Arbeit selbstständig verfasst, alle benutzten Hilfsmittel vollständig und genau angegeben und alles kenntlich gemacht zu haben, was aus Arbeiten anderer unverändert oder mit Abänderungen entnommen wurde sowie die Satzung des KIT zur Sicherung guter wissenschaftlicher Praxis in der jeweils gültigen Fassung beachtet zu haben“.

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

Modeled Prerequisites
The following conditions have to be fulfilled:

1. You need to have earned at least 60 credits in the following fields:

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

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

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

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

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

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

Workload
A total of approx. 900 hours is expected for the preparation and presentation of the Master's thesis. In addition to writing the thesis, this figure includes all necessary activities such as literature research, familiarization with the topic, familiarization with any necessary tools, conducting studies/experiments, supervision meetings, etc.

M 2.11 Module: Natural Sciences [M-WIWI-104904]

Responsible: Professorenschaft des Fachbereichs Physik
Organisation: KIT Department of Economics and Management
Part of: Other KIT-Departments Courses and Interdisciplinary Qualifications

Credits	Grading	Recurrence	Duration	Language	Level	Version
20 CP	pass/fail	Each term	1 term	German	4	1

Elective Courses on Physics (Election: at most 20 credits)			
T-PHYS-103117	Geological Hazards and Risks for External Students	4 CP	Gottschämmer
T-PHYS-101092	Climatology	4 CP	Ginete Werner Pinto
T-PHYS-105594	Exam on Climatology	1 CP	Ginete Werner Pinto

M 2.12 Module: Operations Research [M-WIWI-104899]

Responsible: Professorenschaft des Fachbereichs Operations Research
Organisation: KIT Department of Economics and Management
Part of: KIT-Department of Economics and Management Courses

Credits	Grading	Recurrence	Duration	Language	Level	Version
40 CP	pass/fail	Each term	1 term	German	4	4

Elective Courses on Operations Research (Election: at most 40 credits)			
T-WIWI-102872	Challenges in Supply Chain Management	4,5 CP	Mohr
T-WIWI-102758	Introduction to Operations Research I and II	9 CP	Nickel, Rebennack, Stein
T-WIWI-106546	Introduction to Stochastic Optimization	4,5 CP	Rebennack
T-WIWI-102718	Discrete-Event Simulation in Production and Logistics	4,5 CP	Spieckermann
T-WIWI-106548	Advanced Stochastic Optimization	4,5 CP	Rebennack
T-WIWI-102719	Mixed Integer Programming I	4,5 CP	Stein
T-WIWI-102720	Mixed Integer Programming II	4,5 CP	Stein
T-WIWI-102726	Global Optimization I	4,5 CP	Stein
T-WIWI-102727	Global Optimization II	4,5 CP	Stein
T-WIWI-103638	Global Optimization I and II	9 CP	Stein
T-WIWI-102723	Graph Theory and Advanced Location Models	4,5 CP	Nickel
T-WIWI-102856	Convex Analysis	4,5 CP	Stein
T-WIWI-106549	Large-scale Optimization	4,5 CP	Rebennack
T-WIWI-106199	Modeling and OR-Software: Introduction	4,5 CP	Nickel
T-WIWI-106200	Modeling and OR-Software: Advanced Topics	4,5 CP	Nickel
T-WIWI-111587	Multicriteria Optimization	4,5 CP	Stein
T-WIWI-103124	Multivariate Statistical Methods	4,5 CP	Grothe
T-WIWI-102724	Nonlinear Optimization I	4,5 CP	Stein
T-WIWI-103637	Nonlinear Optimization I and II	9 CP	Stein
T-WIWI-102725	Nonlinear Optimization II	4,5 CP	Stein
T-WIWI-102884	Operations Research in Health Care Management	4,5 CP	Nickel
T-WIWI-102715	Operations Research in Supply Chain Management	4,5 CP	Nickel
T-WIWI-106545	Optimization under Uncertainty	4,5 CP	Rebennack
T-WIWI-102855	Parametric Optimization	4,5 CP	Stein
T-WIWI-102716	Practical Seminar: Health Care Management (with Case Studies)	4,5 CP	Nickel
T-WIWI-103488	Seminar in Operations Research (Bachelor)	3 CP	Nickel, Rebennack, Stein
T-WIWI-103481	Seminar in Operations Research A (Master)	3 CP	Nickel, Rebennack, Stein
T-WIWI-103482	Seminar in Operations Research B (Master)	3 CP	Nickel, Rebennack, Stein
T-WIWI-114109	Service Operations and Cyber Security	4,5 CP	Mohr
T-WIWI-102704	Facility Location and Strategic Supply Chain Management	4,5 CP	Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management	4,5 CP	Nickel
T-WIWI-112109	Topics in Stochastic Optimization	4,5 CP	Rebennack

M 2.13 Module: Social Sciences [M-WIWI-104906]

Responsible: Professorenschaft des Fachbereichs Geistes- und Sozialwissenschaften
Organisation: KIT Department of Economics and Management
Part of: Other KIT-Departments Courses and Interdisciplinary Qualifications

Credits	Grading	Recurrence	Duration	Language	Level	Version
18 CP	pass/fail	Each term	1 term	German	4	1

Elective Courses on Social Sciences (Election: at most 18 credits)			
T-GEISTSOZ-104565	Computer Aided Data Analysis	0 CP	Nollmann
T-GEISTSOZ-109052	Application of Social Science Methods (WiWi)	9 CP	Nollmann
T-GEISTSOZ-109048	Social Science A (WiWi)	3 CP	Nollmann
T-GEISTSOZ-109049	Social Science B (WiWi)	3 CP	Nollmann
T-GEISTSOZ-109047	Analalysis of Social Structurs (WiWi)	3 CP	Nollmann

M 2.14 Module: Statistics [M-WIWI-104902]

Responsible: Professorenschaft des Fachbereichs Statistik
Organisation: KIT Department of Economics and Management
Part of: KIT-Department of Economics and Management Courses

Credits	Grading	Recurrence	Duration	Language	Level	Version
40 CP	pass/fail	Each term	1 term	German	4	5

Elective Courses on Statistics (Election: at most 40 credits)			
T-WIWI-103063	Analysis of Multivariate Data	4,5 CP	Grothe
T-WIWI-111388	Applied Econometrics	4,5 CP	Krüger
T-WIWI-103064	Financial Econometrics	4,5 CP	Schienle
T-WIWI-110939	Financial Econometrics II	4,5 CP	Schienle
T-WIWI-111247	Mathematics for High Dimensional Statistics	4,5 CP	Grothe
T-WIWI-103126	Non- and Semiparametrics	4,5 CP	Schienle
T-WIWI-112153	Microeconometrics	4,5 CP	Krüger
T-WIWI-103127	Panel Data	4,5 CP	Heller
T-WIWI-111941	Lab Practice Sessions in R for Statistics 1 and 2	2 CP	Schienle
T-WIWI-103128	Portfolio and Asset Liability Management	4,5 CP	Safarian
T-WIWI-110868	Predictive Modeling	4,5 CP	Krüger
T-WIWI-111387	Probabilistic Time Series Forecasting Challenge	4,5 CP	Krüger
T-WIWI-103489	Seminar in Statistics (Bachelor)	3 CP	Grothe, Schienle
T-WIWI-103483	Seminar in Statistics A (Master)	3 CP	Grothe, Schienle
T-WIWI-103484	Seminar in Statistics B (Master)	3 CP	Grothe, Schienle
T-WIWI-103123	Advanced Statistics	4,5 CP	Grothe
T-WIWI-102737	Statistics I	5 CP	Grothe, Schienle
T-WIWI-102738	Statistics II	5 CP	Grothe, Schienle
T-WIWI-103065	Statistical Modeling of Generalized Regression Models	4,5 CP	Heller
T-WIWI-103129	Stochastic Calculus and Finance	4,5 CP	Safarian

3 Courses

T 3.1 Course: (Gen)AI-based Automation in Organizations [T-WIWI-114210]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2500015	(Gen)AI-based Automation in Organizations	3 SWS	Lecture /	Mädche, Benke
Exams					
ST 2025	7900308	(Gen)AI-based Automation in Organizations			Mädche

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

Assessment
Alternative exam assessment. It consists of a one-hour exam and the implementation of a capstone project.
The final grade is made up of 60% of the exam grade and 40% of the capstone project grade.
Details on the structure of the assessment will be announced during the lecture.

Workload
135 hours

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

V (Gen)AI-based Automation in Organizations

2500015, SS 2025, 3 SWS, Language: English, Open in study portal

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

Content
Content
The advent of generative artificial intelligence (GenAI) has received great attention in business and society due to its capabilities of content creation or decision making. Individuals started rapidly to use the capabilities of tools like ChatGPT and Google Gemini for text and image generation, personal recommendations, or decision support. At the same time, organizations are challenged to leverage GenAI but also AI technology in general within their business models, processes, and information systems. (Gen)AI technologies enable executing cognitive tasks which in the past were carried out manually by organizations' employees. Ultimately, this leads to an increase of automation in organizations. For example, organizations can automate the creation of customer service responses, contract document reviewing in legal departments, application screening in human resources, or fraud detection in financial transactions.

This digital transformation process to higher levels of automation must be managed by organizations. While the goal is to free up capacity of employees from simple repetitive tasks for more complex ones, improce efficiency and extend innovation capabilities, organizations also must consider social and ethical aspects when implementing automation. Thus, a (Gen)AI integration strategy that benefits organizations must consider many facets, e.g., strategic objectives, business model adaptation, governance and risk management, implementation project portfolio management, and change management.
Summarizing, this course will teach concepts to support organizations and their employees to increase the level of automation leveraging (Gen)AI technologies under consideration of an economic and social perspective.

This course consists of the following major building blocks:

- Introduction to (Gen)AI concepts and technology.
- Overview of history and key concepts of automation in organizations.
- Organizational perspective on integrating (Gen)AI.
- Individual perspective on integrating (Gen)AI capabilities.
- Challenges and countermeasures to secure the integration of (Gen)AI capabilities into organizations from a socio-economic perspective.

The course is complemented with quizzes for knowledge recapture and hands-on activities in which the students apply the lecture content and implement the integration of (generative) AI capabilities in organizational processes and structures based on real-world case studies to increase organizational automation.

Learning goals
As a result of attending this program, students will be able to:

- describe key concepts of (Gen)AI technologies enabling the increase of automation in organizations.
- understand the historical evolution and describe core concepts of automation to drive organizational efficiency and innovation.
- articulate (Gen)AI integration principles for effectively implementing automation in organizations.
- explore and prototype (Gen)AI-based applications to streamline individual tasks and workflows in the context of organizational automation.
- analyze best practices for addressing challenges to ensure adoption of (Gen)AI capabilities for organizational automation from a socio-economic perspective.

Prerequisites
No specific prerequisites are required for the lecture.

T 3.2 Course: Advanced Corporate Finance [T-WIWI-113469]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2530214	Advanced Corporate Finance	2 SWS	Lecture / 🗣	Ruckes
Exams					
WT 24/25	7900058	Advanced Corporate Finance			Ruckes
ST 2025	7900317	Advanced Corporate Finance			Ruckes

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

Assessment
The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.

The exam is offered each semester.

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

V Advanced Corporate Finance

2530214, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

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

Learning outcomes:

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

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

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

T 3.3 Course: Advanced Empirical Asset Pricing [T-WIWI-110513]

Responsible: TT-Prof. Dr. Julian Thimme
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
ST 2025	2530601	Advanced Empirical Asset Pricing Exercises	1 SWS	Practice / 🏵	Thimme
ST 2025	2530602	Advanced Empirical Asset Pricing	2 SWS	Lecture / 🏵	Thimme
Exams					
WT 24/25	7900319	Advanced Empirical Asset Pricing			Thimme
ST 2025	7900321	Advanced Empirical Asset Pricing			Thimme

Legend: 🖥 Online, 🏵 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
The success control takes place in form of a written examination (60 min) during the semester break. If the number of participants is low, an oral examination may also be offered. The examination is offered every semester and can be repeated at any regular examination date.

A bonus can be acquired by submitting exercise solutions to 80% of the assigned exercise tasks. 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.

Recommendations
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.

Additional Information
New course from winter semester 2019/2020.

Workload
135 hours

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

V Advanced Empirical Asset Pricing

2530602, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
Blended (On-Site/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 programing 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. Programing 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.

Organizational issues
Die Veranstaltung findet Dienstags um 14:00-15:30 im Raum 209 im Geb. 09.21 statt und endet nach ersten Semesterhälfte.

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 3.4 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-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	2

Events					
WT 24/25	2500037	Advanced Game Theory	2 SWS	Lecture / 🗣	Puppe, Ammann
WT 24/25	2500038	Übung zu Advanced Game Theory	1 SWS	Practice / 🗣	Puppe, Ammann
Exams					
WT 24/25	7900013	Advanced Game Theory			Puppe
ST 2025	7900126	Advanced Game Theory			Puppe

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

Assessment
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

Recommendations
Basic knowledge of mathematics and statistics is assumed.

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

V Advanced Game Theory

2500037, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

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

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

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

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

Learning objectives:
The student should learn

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

Workload:
Total workload for 4.5 credit points: approx. 135 hours
Attendance: 30 hours
Self-study: 105 hours

Literature

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

T 3.5 Course: Advanced Lab Blockchain Hackathon (Bachelor) [T-WIWI-111127]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	see Annotations	1

Assessment
The examination will no longer be offered from summer semester 2025.

Prerequisites
None

Additional Information
The course is no longer offered.

Workload
135 hours

T 3.6 Course: Advanced Lab Blockchain Hackathon (Master) [T-WIWI-111126]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	see Annotations	1

Assessment
The examination will no longer be offered from summer semester 2025.

Prerequisites
None

Additional Information
The course is no longer offered.

Workload
135 hours

T 3.7 Course: Advanced Lab Informatics (Bachelor) [T-WIWI-110541]

Responsible: Professorenschaft des Instituts AIFB
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

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

Events					
WT 24/25	2512204	Lab Realisation of innovative services (Bachelor)	3 SWS	Practical course /	Toussaint, Schiefer, Schüler
WT 24/25	2512400	Practical Course Sociotechnical Information Systems Development (Bachelor)	3 SWS	Practical course /	Sunyaev, Goram, Leiser
WT 24/25	2512554	Praktikum Security, Usability and Society (Bachelor)	3 SWS	Practical course /	Volkamer, Strufe, Berens, Morisco, Fallahi, Ballreich, Hennig, Länge, Mossano
WT 24/25	2512555	Praktikum Security, Usability and Society (Master)	3 SWS	Practical course /	Volkamer, Strufe, Berens, Fallahi, Morisco, Ballreich, Hennig, Länge, Mossano
ST 2025	2512204	Lab Realisation of innovative services (Bachelor)	3 SWS	Practical course /	Schiefer, Toussaint, Ullrich, Kruse
ST 2025	2512554	Practical Course: Security, Usability and Society	3 SWS	Practical course /	Volkamer, Strufe, Berens, Mossano, Hennig, Veit, Länge, Fallahi, Ballreich
Exams					
WT 24/25	7900047	Advanced Lab Realization of Innovative Services (Bachelor)			Oberweis
WT 24/25	7900080	Advanced Lab Development of Sociotechnical Information Systems (Bachelor)			Sunyaev
WT 24/25	7900116	Advanced Lab Security, Usability and Society (Bachelor)			Volkamer
ST 2025	7900029	Practical lab Security, Usability and Society (Bachelor)			Volkamer, Strufe
ST 2025	7900085	Advanced Lab Realization of innovative services (Bachelor)			Oberweis

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

Assessment
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

Additional Information
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.

Workload
135 hours

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

V

Lab Realisation of innovative services (Bachelor)

2512204, WS 24/25, 3 SWS, Language: German, Open in study portal

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

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

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

V

Praktikum Security, Usability and Society (Bachelor)

2512554, WS 24/25, 3 SWS, Language: German/English, Open in study portal

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

Content
English:

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

Application deadline 25.10.2024
Assignment 30.10.2024
Confirmation deadline 03.11.2024

Important dates:

Kick-off: 23.10.2024, 09:00 AM CET in Big Blue Button - Link and Kronenplatz 5.20, 3A-11.1

Report & code feedback deadline: 26.01.2025, 23:59 CET
Feedback on Report & code: 10.02.2025, 23:59 CET
Final report + code deadline: 17.02.2025, 23:59 CET

Presentation draft deadline: 23.02.2025, 23:59 CET
Feedback on presentation draft: 28.02.2025, 23:59 CET
Final presentation deadline: 07.03.2025, 23:59 CET

Presentation day: 11.03.2025, 09:00 CET

Topics:

Privacy Friendly Apps

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

Title: NoPhish App Rework
Number of students: 2 Ba/Ma
Description: The NoPhish app was one of the first measures from the NoPhish concept. The app has been around for a long time and has not been updated since then. Accordingly, the task of the project is to make the app functional for the current Android version. The app is also to be optimized so that updates, e.g. new chapters, can be added easily.

Designing Security User studies

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

Title: IT-Security and Privacy Studies in the health sector
Number of students: 1 Ba/Ma
Description: Cyberattacks in the healthcare sector are on the rise and medical facilities are increasingly becoming the target of hacker attacks. This often affects sensitive patient data or, in the event of a cyberattack, patient care. The German Federal Office for Information Security (BSI) reports that “[t]he security situation of the IT infrastructure of medical practices in Germany [...] has hardly been studied to date.” The aim of the work is to find out which scientific studies already exist in the field of IT security and privacy and which best practices can be derived from these studies, e.g. on the subject of recruitment, study design or consideration of special needs.

Title: Understanding Privacy and Security Risk Awareness Among Sports Science Students at KIT
Number of students: 1 Ba/Ma
Description: Privacy and Security Awareness in Data Handling: The key issue is that many sports science students may not fully understand the privacy and security risks involved in handling sensitive data. As students increasingly deal with personal and research-related information, gaps in their awareness of data protection, such as risks of data breaches or misuse, can lead to significant vulnerabilities. The aim of the task is to design a survey that assesses their current understanding of these risks, helping to identify areas where further education or guidance is needed.

Run Usable Security Studies and Results Analysis

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

Title: Visualization of Eye Gaze Patterns during Authentication Tasks
Number of students: 1 Ba/Ma
Description: In this project, students will analyze and visualize eye gaze data collected during two specific authentication tasks: the Dot Task and the Slider Task. The primary objective is to represent subjects' eye movements visually, enhancing the understanding of gaze patterns during the authentication process. *Dot Task Visualization:* For the Dot Task, participants were instructed to focus on a sequence of dots displayed on a screen. The dataset includes the positions of these dots and the corresponding gaze locations of the subjects. The student's task is to create a dynamic visualization that not only represents these positions accurately but also illustrates the sequence in which the dots were focused on by the subjects. *Slider Task Visualization:* The Slider Task involved presenting participants with a series of images, for which both the images' locations on the screen and the subjects' gaze locations are recorded. The challenge is to develop a heatmap visualization based on this data, effectively demonstrating the concentration and dispersion of gaze points across different images.

Title: Compare BSI Phishing Game with the NoPhish Game
Number of students: 1 Ba
Description: The NoPhish app, one of the first implementations of the NoPhish concept, is a form of serious game. The BSI has also developed a game in the field of phishing. Both "games" use different approaches to impart knowledge from the same context. The aim is to evaluate the two games in terms of similarities and differences.

Title: Chatbots for Literature Reviews
Number of students: 1 Ba
Description: Chatbots are becoming increasingly popular and are already being used in various areas. But in what form can these bots be used for science? The variety of chatbots also raises the question of whether there are chatbots that are better suited to a scientific context. The aim is to identify a selection of chatbots and evaluate them in terms of their effectiveness for future literature research. To this end, the results of the chatbots will be compared with the ACM database in order to check their effectiveness for finding literature for a specific period of time.

Title: Phishing Advice from Organizations (English Only)
Number of students: 1 Ba/Ma
Description: Many companies distribute information on how to recognize phishing via various channels such as e-mails, e.g. Amazon or Telekom. The question arises as to how helpful these tips are in reality. Are they too specific to the context of the company or so abstractly formulated that they are of no real help to users? The aim of the work is to collect various hints and then compare them with the hints of the NoPhish concept in order to find differences and similarities between the hints and the concept.

Title: How do website owners become aware that their website was hacked?
Number of students: 1 Ba/Ma
Description: We identified website owners that were affected by a hack on their website and sent them a notification. During the course of the notification process, we also identified several websites who seemingly remediated the hack before our notification. We now wanted to find out, how those website owners got aware of the hack. If they were notified by a third party, we would also like to know how and by whom they were notified and what their feelings were with respect to the notification.

Title: Cognitive Walkthrough for applying, installing, and using an S/MIME certificate at KIT
Number of students: 1-2 Ba/Ma
Description: The main application of S/MIME is the encryption and signing of e-mail messages. The KIT offers all members the opportunity to have S/MIME certificates issued and has recently started using a new process of the European research network GÉANT for this purpose. The aim of this work is to carry out a cognitive walkthrough with members of the KIT to apply for, set up and use S/MIME certificates and to identify problem areas and obstacles.

Title: Anti-phishing information presented in medias and anti-phishing channels (English only)
Number of students: 1 Ba
Description: Several different channels exists to disseminate information about phishing, be it recent major campaigns or more specific recommendations. Some of these are through social networks accounts, others are specific webpages created "ad hoc" by certain organizations (e.g., Action Fraud in the UK, the BSI). The goal of this topic is to conduct a media review of several channels, collect the data, and compare it with results from a previous iteration of this same topic.

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) .

V **Praktikum Security, Usability and Society (Master)**
2512555, WS 24/25, 3 SWS, Language: German/English, Open in study portal

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

Content
English:

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

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Topics:

Privacy Friendly Apps

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Designing Security User studies

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

Title: Usability of Password Managers in Virtual Reality
Number of students: 2 Ma
Description: The pre-dominant form of authentication in Virtual Reality (VR) are passwords. Passwords create a burden for users in the VR environment because of special input methods and the virtual keyboard [Stephenson, S. et al (2022). SoK: Authentication in Augmented and Virtual Reality]. Password Managers (PMs) can support the user with handling this problem [Mayer, P. et al. (2022). Why Users (Don't) Use Password Managers at a Large Educational Institution]. They offer auto-filling features, store credentials in an overview or generate complex and secure passwords. Especially in the VR context, where typing a password is slow and complex, PMs can be beneficial. We want to explore the different PMs in VR and test the usability to find challenges and possible solutions.

Title: IT-Security and Privacy Studies in the health sector
Number of students: 1 Ba/Ma
Description: Cyberattacks in the healthcare sector are on the rise and medical facilities are increasingly becoming the target of hacker attacks. This often affects sensitive patient data or, in the event of a cyberattack, patient care. The German Federal Office for Information Security (BSI) reports that “[t]he security situation of the IT infrastructure of medical practices in Germany [...] has hardly been studied to date.” The aim of the work is to find out which scientific studies already exist in the field of IT security and privacy and which best practices can be derived from these studies, e.g. on the subject of recruitment, study design or consideration of special needs.

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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) .

V **Lab Realisation of innovative services (Bachelor)** **Practical course (P)** **On-Site**
2512204, SS 2025, 3 SWS, Language: German, Open in study portal

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

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

V **Practical Course: Security, Usability and Society** **Practical course (P)** **Blended (On-Site/Online)**
2512554, SS 2025, 3 SWS, Language: English, Open in study portal

Content
In the lab-course “Security, Usability and Society”, students deal with practical and interdisciplinary topics from the field of IT security and privacy at the cutting edge of society. In addition to the programming of data-saving apps, the development or implementation of user studies can also be possible tasks in this course.

The course can be credited towards the KASTEL certificate. Further information about the KASTEL certificate can be found on the SECUSO website: https://secuso.aifb.kit.edu/Studium_und_Lehre.php

Prerequisites:

The internship is aimed at Bachelor's and Master's students from the Industrial Engineering and Management, Business Informatics and Computer Science degree programs as well as related degree programs.

Organization:

There are two mandatory attendance dates: The kick-off is scheduled for the first week of the lectures, and the final presentations will take place in the second to last week of lectures. Additional dates will be arranged individually with the supervisors. All in-person lectures will be held in English. The main components of the course is the work on the respective topic, a final presentation and a final report. After consultation with the supervisor, all components can be either completed in German or English.

If you have any questions about the course or the registration, please contact contact@secuso.org.

Registration:

The topics for the course as well as the registration is organized via the WiWi-Portal. To reserve a place and choose a topic, students register for the course in the WiWi-Portal. A description of the current topics as well as important dates and deadlines can also be found there.

Please note that the number of topics is limited and topics are allocated in the order of registration.

T 3.8 Course: Advanced Lab Informatics (Master) [T-WIWI-110548]

Responsible: Professorenschaft des Instituts AIFB
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

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

Events					
WT 24/25	2512101	Seminar: Digital Twins with Lego: Hands-on Workshop in Data-driven Simulation (Master)	2 SWS	Seminar / 🗣	Lazarova-Molnar, Götz, Khodadadi
WT 24/25	2512205	Lab Realisation of innovative services (Master)	3 SWS	Practical course / 🧩	Toussaint, Schiefer, Schüler
WT 24/25	2512314	Practical Course Linked Data and the Semantic Web (Master)	3 SWS	Practical course / 🗣	Käfer, Braun
WT 24/25	2512401	Practical Course Sociotechnical Information Systems Development (Master)	3 SWS	Practical course / 💻	Sunyaev, Leiser
WT 24/25	2512501	Practical Course Cognitive automobiles and robots (Master)	3 SWS	Practical course / 🧩	Zöllner, Daaboul
WT 24/25	2512600	Project lab Information Service Engineering (Master)	3 SWS	Practical course / 🧩	Sack, Tietz
ST 2025	2512205	Lab Realisation of innovative services (Master)	3 SWS	Practical course / 🗣	Schiefer, Toussaint, Ullrich, Kruse
ST 2025	2512207	Smart Living Lab – IoT for Everyday (Master)	3 SWS	Practical course / 🗣	Oberweis, Rybinski
ST 2025	2512500	Project Lab Machine Learning	3 SWS	Practical course / 🧩	Daaboul, Zöllner, Schneider
ST 2025	2512555	Praktikum Security, Usability and Society (Master)	3 SWS	Practical course / 🧩	Volkamer, Strufe, Berens, Mossano, Hennig, Veit, Fallahi, Länge, Ballreich
ST 2025	2512600	Project lab Telling Data Stories with Semantic Technologies and Generative AI (Master)	3 SWS	Practical course / 🧩	Sack, Tietz
Exams					
WT 24/25	7900046	Advanced Lab Security (Master)			Volkamer
WT 24/25	7900102	Advanced Lab Information Service Engineering (Master)			Sack
WT 24/25	7900107	Advanced Lab Cognitive Automobile and Robots (Master)			Zöllner
WT 24/25	7900143	Advanced Lab Development of Sociotechnical Information Systems (Master)			Sunyaev
WT 24/25	7900218	Advanced Lab Linked Data and the Semantic Web (Master)			Käfer
WT 24/25	7900306	Advanced Lab Realization of Innovative Services (Master)			Oberweis
WT 24/25	7900307	Advanced Lab Security, Usability and Society (Master)			Volkamer
ST 2025	7900020	Smart Living Lab – IoT for Everyday (Master)			Oberweis
ST 2025	7900030	Project Lab Telling Data Stories with Semantic Technologies and Generative AI (Master)			Sack
ST 2025	7900086	Project Lab Machine Learning			Zöllner
ST 2025	7900148	Advanced Lab Realization of innovative services (Master)			Oberweis
ST 2025	7900178	Practical Lab Security, Usability and Society (Master)			Volkamer, Strufe

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

Assessment
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

Additional Information
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.

Workload
135 hours

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

V **Lab Realisation of innovative services (Master)**
2512205, WS 24/25, 3 SWS, Language: German, Open in study portal
Practical course (P)
Blended (On-Site/Online)

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

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

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

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

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

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

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

Topics of interest include, but are not limited to:

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

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

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

Content
The lab is intended as a practical supplement to courses such as "Machine Learning 1/2".
Scientific topics, mostly in the area of autonomous driving and robotics, will be addressed in joint work with ML/KI methods. The goal of the internship is for participants to design, develop, and evaluate ML Software system.

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

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

Learning Objectives:

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

Recommendations:

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

Workload:

The workload of 5 credit points consists of practical implementation of the selected solution, as well as time for literature research and planning/specification of the selected solution. In addition, a short report and presentation of the work performed will be prepared.

Organizational issues
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

V **Project lab Information Service Engineering (Master)** **Practical course (P)**
2512600, WS 24/25, 3 SWS, Language: English, Open in study portal **Blended (On-Site/Online)**

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

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

Required coursework includes:

- Mid term presentation (5-10 min)
- Final presentation (10-15 min)
- Course report (c. 16 pages)
- Participation and contribution of the students during the course
- Software development and delivery

Notes:

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

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

Participation will be restricted to 16 students.

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

ISE Tutor Team:

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

WS 2024/25 Tasks List:

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

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

V **Lab Realisation of innovative services (Master)** **Practical course (P)**
2512205, SS 2025, 3 SWS, Language: German, Open in study portal **On-Site**

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

Organizational issues
Informationen zu Themen und die Anmeldung erfolgt vor Praktikumsbeginn im Wiwi-Portal
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V **Smart Living Lab – IoT for Everyday (Master)** **Practical course (P)**
2512207, SS 2025, 3 SWS, Language: German, Open in study portal **On-Site**

Content
As part of the lab, various topics on everyday automation are offered. During the lab, the participants will gain an insight into problem-solving oriented project work and work on a project together in small groups.

In case of questions, please contact fabian.rybinski@kit.edu.

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

Bei Fragen bitte an fabian.rybinski@kit.edu wenden.

V Project Lab Machine Learning

2512500, SS 2025, 3 SWS, Language: German/English, Open in study portal

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

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

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

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

Learning objectives:

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

Recommendations:

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

Workload:

The workload of 5 credit points consists of the time spent in the lab for practical implementation of the selected solution, as well as the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

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V Praktikum Security, Usability and Society (Master)

2512555, SS 2025, 3 SWS, Language: English, Open in study portal

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

Content
In the lab-course “Security, Usability and Society”, students deal with practical and interdisciplinary topics from the field of IT security and privacy at the cutting edge of society. In addition to the programming of data-saving apps, the development or implementation of user studies can also be possible tasks in this course.

The course can be credited towards the KASTEL certificate. Further information about the KASTEL certificate can be found on the SECUSO website: https://secuso.aifb.kit.edu/Studium_und_Lehre.php

Prerequisites:

The internship is aimed at Bachelor's and Master's students from the Industrial Engineering and Management, Business Informatics and Computer Science degree programs as well as related degree programs.

Organization:

There are two mandatory attendance dates: The kick-off is scheduled for the first week of the lectures, and the final presentations will take place in the second to last week of lectures. Additional dates will be arranged individually with the supervisors. All in-person lectures will be held in English. The main components of the course is the work on the respective topic, a final presentation and a final report. After consultation with the supervisor, all components can be either completed in German or English.

If you have any questions about the course or the registration, please contact contact@secuso.org.

Registration:

The topics for the course as well as the registration is organized via the WiWi-Portal. To reserve a place and choose a topic, students register for the course in the WiWi-Portal. A description of the current topics as well as important dates and deadlines can also be found there.

Please note that the number of topics is limited and topics are allocated in the order of registration.

V Project lab Telling Data Stories with Semantic Technologies and Generative AI (Master)

2512600, SS 2025, 3 SWS, Language: English, Open in study portal

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

Content
Large Knowledge Graphs are often overwhelming for non-technical users due to their complexity, making it difficult to understand the structures and contents in a clear and intuitive way. Data Stories are designed to help users explore data; they simplify the complex relationships within Knowledge Graphs, reveal "hidden" connections and patterns between entities, and provide narrative summaries that highlight the most relevant aspects of large datasets. This makes it easier for non-technical users to intuitively explore and interpret graph data, helping them discover insights they weren’t specifically searching for.

In this course, we aim to conceptualize and implement methods for creating Data Stories from large and complex Knowledge Graphs. This includes the creation of engaging visualizations and the use of generative AI to bridge the gap between data creators and users. Domain experts will share their insights into the data and help evaluate the effectiveness of the Data Stories.

In this course you have the chance to combine creativity and practical implementation tasks to develop solutions for real-world projects and problems.

T 3.9 Course: Advanced Lab Realization of Innovative Services (Bachelor) [T-WIWI-112915]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

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

Events					
WT 24/25	2512204	Lab Realisation of innovative services (Bachelor)	3 SWS	Practical course /	Toussaint, Schiefer, Schüler
ST 2025	2512204	Lab Realisation of innovative services (Bachelor)	3 SWS	Practical course /	Schiefer, Toussaint, Ullrich, Kruse
Exams					
WT 24/25	7900047	Advanced Lab Realization of Innovative Services (Bachelor)			Oberweis
ST 2025	7900085	Advanced Lab Realization of innovative services (Bachelor)			Oberweis

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

Assessment
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.

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

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

Workload
135 hours

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

V Lab Realisation of innovative services (Bachelor)

2512204, WS 24/25, 3 SWS, Language: German, Open in study portal

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

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

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

V Lab Realisation of innovative services (Bachelor)

2512204, SS 2025, 3 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

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

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

T 3.10 Course: Advanced Lab Realization of Innovative Services (Master) [T-WIWI-112914]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

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

Events					
WT 24/25	2512205	Lab Realisation of innovative services (Master)	3 SWS	Practical course /	Toussaint, Schiefer, Schüler
ST 2025	2512205	Lab Realisation of innovative services (Master)	3 SWS	Practical course /	Schiefer, Toussaint, Ullrich, Kruse
Exams					
WT 24/25	7900218	Advanced Lab Linked Data and the Semantic Web (Master)			Käfer
WT 24/25	7900306	Advanced Lab Realization of Innovative Services (Master)			Oberweis
ST 2025	7900148	Advanced Lab Realization of innovative services (Master)			Oberweis

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

Assessment
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.

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

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

Workload
135 hours

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

V Lab Realisation of innovative services (Master)

2512205, WS 24/25, 3 SWS, Language: German, Open in study portal

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

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

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

V Lab Realisation of innovative services (Master)

2512205, SS 2025, 3 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

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

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

T 3.11 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-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each term	3

Events					
WT 24/25	2512554	Praktikum Security, Usability and Society (Bachelor)	3 SWS	Practical course /	Volkamer, Strufe, Berens, Morisco, Fallahi, Ballreich, Hennig, Länge, Mossano
WT 24/25	2512555	Praktikum Security, Usability and Society (Master)	3 SWS	Practical course /	Volkamer, Strufe, Berens, Fallahi, Morisco, Ballreich, Hennig, Länge, Mossano
ST 2025	2512554	Practical Course: Security, Usability and Society	3 SWS	Practical course /	Volkamer, Strufe, Berens, Mossano, Hennig, Veit, Länge, Fallahi, Ballreich
ST 2025	2512555	Praktikum Security, Usability and Society (Master)	3 SWS	Practical course /	Volkamer, Strufe, Berens, Mossano, Hennig, Veit, Fallahi, Länge, Ballreich
Exams					
WT 24/25	7900116	Advanced Lab Security, Usability and Society (Bachelor)			Volkamer
WT 24/25	7900307	Advanced Lab Security, Usability and Society (Master)			Volkamer
ST 2025	7900029	Practical lab Security, Usability and Society (Bachelor)			Volkamer, Strufe

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

Assessment
Assessment takes the form of an alternative exam. It consists of a practical assignment, a presentation, and, if required, a written report. The lectures and the presentations will be in English. The written report can be written in either English or German after consultation with the supervisor.
Practical work, presentation, and written thesis are weighted according to the course.

Prerequisites
None

Recommendations
Knowledge from the lecture "Applied Informatics - Cybersecurity" is recommended.

Workload
135 hours

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

V **Praktikum Security, Usability and Society (Bachelor)** **Practical course (P)**
2512554, WS 24/25, 3 SWS, Language: German/English, Open in study portal **Blended (On-Site/Online)**

Content
English:

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

Application deadline 25.10.2024
Assignment 30.10.2024
Confirmation deadline 03.11.2024

Important dates:

Kick-off: 23.10.2024, 09:00 AM CET in Big Blue Button - Link and Kronenplatz 5.20, 3A-11.1

Report & code feedback deadline: 26.01.2025, 23:59 CET
Feedback on Report & code: 10.02.2025, 23:59 CET
Final report + code deadline: 17.02.2025, 23:59 CET

Presentation draft deadline: 23.02.2025, 23:59 CET
Feedback on presentation draft: 28.02.2025, 23:59 CET
Final presentation deadline: 07.03.2025, 23:59 CET

Presentation day: 11.03.2025, 09:00 CET

Topics:

Privacy Friendly Apps

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

Title: NoPhish App Rework
Number of students: 2 Ba/Ma
Description: The NoPhish app was one of the first measures from the NoPhish concept. The app has been around for a long time and has not been updated since then. Accordingly, the task of the project is to make the app functional for the current Android version. The app is also to be optimized so that updates, e.g. new chapters, can be added easily.

Designing Security User studies

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

Title: IT-Security and Privacy Studies in the health sector
Number of students: 1 Ba/Ma
Description: Cyberattacks in the healthcare sector are on the rise and medical facilities are increasingly becoming the target of hacker attacks. This often affects sensitive patient data or, in the event of a cyberattack, patient care. The German Federal Office for Information Security (BSI) reports that “[t]he security situation of the IT infrastructure of medical practices in Germany [...] has hardly been studied to date.” The aim of the work is to find out which scientific studies already exist in the field of IT security and privacy and which best practices can be derived from these studies, e.g. on the subject of recruitment, study design or consideration of special needs.

Title: Understanding Privacy and Security Risk Awareness Among Sports Science Students at KIT
Number of students: 1 Ba/Ma
Description: Privacy and Security Awareness in Data Handling: The key issue is that many sports science students may not fully understand the privacy and security risks involved in handling sensitive data. As students increasingly deal with personal and research-related information, gaps in their awareness of data protection, such as risks of data breaches or misuse, can lead to significant vulnerabilities. The aim of the task is to design a survey that assesses their current understanding of these risks, helping to identify areas where further education or guidance is needed.

Run Usable Security Studies and Results Analysis

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

Title: Visualization of Eye Gaze Patterns during Authentication Tasks
Number of students: 1 Ba/Ma
Description: In this project, students will analyze and visualize eye gaze data collected during two specific authentication tasks: the Dot Task and the Slider Task. The primary objective is to represent subjects' eye movements visually, enhancing the understanding of gaze patterns during the authentication process. *Dot Task Visualization:* For the Dot Task, participants were instructed to focus on a sequence of dots displayed on a screen. The dataset includes the positions of these dots and the corresponding gaze locations of the subjects. The student's task is to create a dynamic visualization that not only represents these positions accurately but also illustrates the sequence in which the dots were focused on by the subjects. *Slider Task Visualization:* The Slider Task involved presenting participants with a series of images, for which both the images' locations on the screen and the subjects' gaze locations are recorded. The challenge is to develop a heatmap visualization based on this data, effectively demonstrating the concentration and dispersion of gaze points across different images.

Title: Compare BSI Phishing Game with the NoPhish Game
Number of students: 1 Ba
Description: The NoPhish app, one of the first implementations of the NoPhish concept, is a form of serious game. The BSI has also developed a game in the field of phishing. Both "games" use different approaches to impart knowledge from the same context. The aim is to evaluate the two games in terms of similarities and differences.

Title: Chatbots for Literature Reviews
Number of students: 1 Ba
Description: Chatbots are becoming increasingly popular and are already being used in various areas. But in what form can these bots be used for science? The variety of chatbots also raises the question of whether there are chatbots that are better suited to a scientific context. The aim is to identify a selection of chatbots and evaluate them in terms of their effectiveness for future literature research. To this end, the results of the chatbots will be compared with the ACM database in order to check their effectiveness for finding literature for a specific period of time.

Title: Phishing Advice from Organizations (English Only)
Number of students: 1 Ba/Ma
Description: Many companies distribute information on how to recognize phishing via various channels such as e-mails, e.g. Amazon or Telekom. The question arises as to how helpful these tips are in reality. Are they too specific to the context of the company or so abstractly formulated that they are of no real help to users? The aim of the work is to collect various hints and then compare them with the hints of the NoPhish concept in order to find differences and similarities between the hints and the concept.

Title: How do website owners become aware that their website was hacked?
Number of students: 1 Ba/Ma
Description: We identified website owners that were affected by a hack on their website and sent them a notification. During the course of the notification process, we also identified several websites who seemingly remediated the hack before our notification. We now wanted to find out, how those website owners got aware of the hack. If they were notified by a third party, we would also like to know how and by whom they were notified and what their feelings were with respect to the notification.

Title: Cognitive Walkthrough for applying, installing, and using an S/MIME certificate at KIT
Number of students: 1-2 Ba/Ma
Description: The main application of S/MIME is the encryption and signing of e-mail messages. The KIT offers all members the opportunity to have S/MIME certificates issued and has recently started using a new process of the European research network GÉANT for this purpose. The aim of this work is to carry out a cognitive walkthrough with members of the KIT to apply for, set up and use S/MIME certificates and to identify problem areas and obstacles.

Title: Anti-phishing information presented in medias and anti-phishing channels (English only)
Number of students: 1 Ba
Description: Several different channels exists to disseminate information about phishing, be it recent major campaigns or more specific recommendations. Some of these are through social networks accounts, others are specific webpages created "ad hoc" by certain organizations (e.g., Action Fraud in the UK, the BSI). The goal of this topic is to conduct a media review of several channels, collect the data, and compare it with results from a previous iteration of this same topic.

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) .

V **Praktikum Security, Usability and Society (Master)**
2512555, WS 24/25, 3 SWS, Language: German/English, Open in study portal

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

Content
English:

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

Application deadline 25.10.2024
Assignment 30.10.2024
Confirmation deadline 03.11.2024

Important dates:

Kick-off: 23.10.2024, 09:00 AM CET in Big Blue Button - Link and Kronenplatz 5.20, 3A-11.1

Report & code feedback deadline: 26.01.2025, 23:59 CET
Feedback on Report & code: 10.02.2025, 23:59 CET
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Presentation draft deadline: 23.02.2025, 23:59 CET
Feedback on presentation draft: 28.02.2025, 23:59 CET
Final presentation deadline: 07.03.2025, 23:59 CET

Presentation day: 11.03.2025, 09:00 CET

Topics:

Privacy Friendly Apps

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

Title: NoPhish App Rework
Number of students: 2 Ba/Ma
Description: The NoPhish app was one of the first measures from the NoPhish concept. The app has been around for a long time and has not been updated since then. Accordingly, the task of the project is to make the app functional for the current Android version. The app is also to be optimized so that updates, e.g. new chapters, can be added easily.

Designing Security User studies

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

Title: Usability of Password Managers in Virtual Reality
Number of students: 2 Ma
Description: The pre-dominant form of authentication in Virtual Reality (VR) are passwords. Passwords create a burden for users in the VR environment because of special input methods and the virtual keyboard [Stephenson, S. et al (2022). SoK: Authentication in Augmented and Virtual Reality]. Password Managers (PMs) can support the user with handling this problem [Mayer, P. et al. (2022). Why Users (Don't) Use Password Managers at a Large Educational Institution]. They offer auto-filling features, store credentials in an overview or generate complex and secure passwords. Especially in the VR context, where typing a password is slow and complex, PMs can be beneficial. We want to explore the different PMs in VR and test the usability to find challenges and possible solutions.

Title: IT-Security and Privacy Studies in the health sector
Number of students: 1 Ba/Ma
Description: Cyberattacks in the healthcare sector are on the rise and medical facilities are increasingly becoming the target of hacker attacks. This often affects sensitive patient data or, in the event of a cyberattack, patient care. The German Federal Office for Information Security (BSI) reports that “[t]he security situation of the IT infrastructure of medical practices in Germany [...] has hardly been studied to date.” The aim of the work is to find out which scientific studies already exist in the field of IT security and privacy and which best practices can be derived from these studies, e.g. on the subject of recruitment, study design or consideration of special needs.

Title: Understanding Privacy and Security Risk Awareness Among Sports Science Students at KIT
Number of students: 1 Ba/Ma
Description: Privacy and Security Awareness in Data Handling: The key issue is that many sports science students may not fully understand the privacy and security risks involved in handling sensitive data. As students increasingly deal with personal and research-related information, gaps in their awareness of data protection, such as risks of data breaches or misuse, can lead to significant vulnerabilities. The aim of the task is to design a survey that assesses their current understanding of these risks, helping to identify areas where further education or guidance is needed.

Run Usable Security Studies and Results Analysis

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

Title: Visualization of Eye Gaze Patterns during Authentication Tasks
Number of students: 1 Ba/Ma
Description: In this project, students will analyze and visualize eye gaze data collected during two specific authentication tasks: the Dot Task and the Slider Task. The primary objective is to represent subjects' eye movements visually, enhancing the understanding of gaze patterns during the authentication process. *Dot Task Visualization:* For the Dot Task, participants were instructed to focus on a sequence of dots displayed on a screen. The dataset includes the positions of these dots and the corresponding gaze locations of the subjects. The student's task is to create a dynamic visualization that not only represents these positions accurately but also illustrates the sequence in which the dots were focused on by the subjects. *Slider Task Visualization:* The Slider Task involved presenting participants with a series of images, for which both the images' locations on the screen and the subjects' gaze locations are recorded. The challenge is to develop a heatmap visualization based on this data, effectively demonstrating the concentration and dispersion of gaze points across different images.

Title: Phishing Advice from Organizations (English Only)
Number of students: 1 Ba/Ma
Description: Many companies distribute information on how to recognize phishing via various channels such as e-mails, e.g. Amazon or Telekom. The question arises as to how helpful these tips are in reality. Are they too specific to the context of the company or so abstractly formulated that they are of no real help to users? The aim of the work is to collect various hints and then compare them with the hints of the NoPhish concept in order to find differences and similarities between the hints and the concept.

Title: How do website owners become aware that their website was hacked?
Number of students: 1 Ba/Ma
Description: We identified website owners that were affected by a hack on their website and sent them a notification. During the course of the notification process, we also identified several websites who seemingly remediated the hack before our notification. We now wanted to find out, how those website owners got aware of the hack. If they were notified by a third party, we would also like to know how and by whom they were notified and what their feelings were with respect to the notification.

Title: Cognitive Walkthrough for applying, installing, and using an S/MIME certificate at KIT
Number of students: 1-2 Ba/Ma
Description: The main application of S/MIME is the encryption and signing of e-mail messages. The KIT offers all members the opportunity to have S/MIME certificates issued and has recently started using a new process of the European research network GÉANT for this purpose. The aim of this work is to carry out a cognitive walkthrough with members of the KIT to apply for, set up and use S/MIME certificates and to identify problem areas and obstacles.

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) .

V **Practical Course: Security, Usability and Society** — **Practical course (P)** **Blended (On-Site/Online)**
2512554, SS 2025, 3 SWS, Language: English, Open in study portal

Content
In the lab-course “Security, Usability and Society”, students deal with practical and interdisciplinary topics from the field of IT security and privacy at the cutting edge of society. In addition to the programming of data-saving apps, the development or implementation of user studies can also be possible tasks in this course.

The course can be credited towards the KASTEL certificate. Further information about the KASTEL certificate can be found on the SECUSO website: https://secuso.aifb.kit.edu/Studium_und_Lehre.php

Prerequisites:

The internship is aimed at Bachelor's and Master's students from the Industrial Engineering and Management, Business Informatics and Computer Science degree programs as well as related degree programs.

Organization:

There are two mandatory attendance dates: The kick-off is scheduled for the first week of the lectures, and the final presentations will take place in the second to last week of lectures. Additional dates will be arranged individually with the supervisors. All in-person lectures will be held in English. The main components of the course is the work on the respective topic, a final presentation and a final report. After consultation with the supervisor, all components can be either completed in German or English.

If you have any questions about the course or the registration, please contact contact@secuso.org.

Registration:

The topics for the course as well as the registration is organized via the WiWi-Portal. To reserve a place and choose a topic, students register for the course in the WiWi-Portal. A description of the current topics as well as important dates and deadlines can also be found there.

Please note that the number of topics is limited and topics are allocated in the order of registration.

V **Praktikum Security, Usability and Society (Master)** — **Practical course (P)** **Blended (On-Site/Online)**
2512555, SS 2025, 3 SWS, Language: English, Open in study portal

Content
In the lab-course “Security, Usability and Society”, students deal with practical and interdisciplinary topics from the field of IT security and privacy at the cutting edge of society. In addition to the programming of data-saving apps, the development or implementation of user studies can also be possible tasks in this course.

The course can be credited towards the KASTEL certificate. Further information about the KASTEL certificate can be found on the SECUSO website: https://secuso.aifb.kit.edu/Studium_und_Lehre.php

Prerequisites:

The internship is aimed at Bachelor's and Master's students from the Industrial Engineering and Management, Business Informatics and Computer Science degree programs as well as related degree programs.

Organization:

There are two mandatory attendance dates: The kick-off is scheduled for the first week of the lectures, and the final presentations will take place in the second to last week of lectures. Additional dates will be arranged individually with the supervisors. All in-person lectures will be held in English. The main components of the course is the work on the respective topic, a final presentation and a final report. After consultation with the supervisor, all components can be either completed in German or English.

If you have any questions about the course or the registration, please contact contact@secuso.org.

Registration:

The topics for the course as well as the registration is organized via the WiWi-Portal. To reserve a place and choose a topic, students register for the course in the WiWi-Portal. A description of the current topics as well as important dates and deadlines can also be found there.

Please note that the number of topics is limited and topics are allocated in the order of registration.

T 3.12 Course: Advanced Lab Sociotechnical Information Systems Development (Bachelor) [T-WIWI-111124]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	see Annotations	1

Events					
WT 24/25	2512400	Practical Course Sociotechnical Information Systems Development (Bachelor)	3 SWS	Practical course / 🖳	Sunyaev, Goram, Leiser
Exams					
WT 24/25	7900080	Advanced Lab Development of Sociotechnical Information Systems (Bachelor)			Sunyaev

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

Assessment
The examination will no longer be offered from summer semester 2025.

Prerequisites
None

Additional Information
The course is no longer offered.

Workload
135 hours

T 3.13 Course: Advanced Lab Sociotechnical Information Systems Development (Master) [T-WIWI-111125]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	see Annotations	1

Events					
WT 24/25	2512401	Practical Course Sociotechnical Information Systems Development (Master)	3 SWS	Practical course /	Sunyaev, Leiser
Exams					
WT 24/25	7900143	Advanced Lab Development of Sociotechnical Information Systems (Master)			Sunyaev

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

Assessment
The examination will no longer be offered from summer semester 2025.

Prerequisites
None

Additional Information
The course is no longer offered.

Workload
135 hours

T 3.14 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2540535	Advanced Machine Learning	2 SWS	Lecture	Nazemi
ST 2025	2540536	Exercise Advanced Machine Learning	1 SWS	Practice	Nazemi
Exams					
WT 24/25	7900253	Advanced Machine Learning (Nachklausur SoSe 2024)			Geyer-Schulz
ST 2025	7900227	Advanced Machine Learning			Geyer-Schulz

Assessment
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 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)

Content
In recent years, the volume, variety, velocity, veracity, and variability of available data have increased due to improvements in computational and storage power. The rise of the Internet has made available large sets of data that allow us to use and merge them for different purposes. Data science helps us to extract knowledge from the continually-increasing large datasets. This course will introduce students to a wide range of machine learning and statistical techniques such as deep learning, LASSO, and support vector machine. You will get familiar with text mining, and the tools you need to analyze the various facets of data sets in practice. Students will learn theory and concepts with real data sets from different disciplines such as marketing, finance, and business.

Tentative Course Outline:

- Introduction
- Statistical Inference
- Shrinkage Methods
- Model Assessment and Selection
- Tree-based Machine Learning Algorithms
- Dimensionality Reduction
- Neural Networks and Deep Learning
- Natural Language Processing with Deep Learning
- Support Vector Machine

Time of attendance

- Attending the lecture: 13 x 90min = 19h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m

The student will learn

- A wide range of machine learning algorithms and their weaknesses.
- The fundamental issues and challenges: data, high-dimension, train, model selection, etc.
- How to imply machine learning algorithms for real-world applications.
- The fundamentals of deep learning, main research activities, and on-going research in this field.

Literature

- Alpaydin, E. (2014). Introduction to Machine Learning. Third Edition, MIT Press.
- De Prado, M. L. (2018). Advances in Financial Machine Learning. John Wiley & Sons.
- Goodfellow, I., Bengio, Y., and A. Courville (2017). Deep Learning. MIT Press. (online available)
- Hastie, T., Tibshirani, R., and J. Friedman (2009). Elements of Statistical Learning. Second Edition. Springer. (online available)
- Leskovec, J., Rajaraman, A., Ullman, J. D., (2014). Mining of Massive Datasets. Cambridge University Press. (online available)
- Witten, I. H., Eibe, F., Hall, M. A., Pal, C. J. (2016). Data Mining: Practical Machine Learning Tools and Techniques. Morgan Kaufmann.

T 3.15 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	9 CP	graded	Each term	5

Events					
ST 2025	2500016	Advanced Machine Learning and Data Science	4 SWS	Project (P / ⛭	Ulrich
Exams					
WT 24/25	7900291	Advanced Machine Learning and Data Science			Ulrich

Legend: 🖥 Online, ⛭ Blended (On-Site/Online), 🗣 On-Site, × Cancelled

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

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

Workload
270 hours

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

V Advanced Machine Learning and Data Science

2500016, SS 2025, 4 SWS, Language: English, Open in study portal

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

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

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

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

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

Literature
Literatur und Computerprogramme wird in der ersten Vorlesung bekannt gegeben.

T 3.16 Course: Advanced Management Accounting [T-WIWI-102885]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Oral examination	4,5 CP	graded	Each winter term	2

Events					
WT 24/25	2579907	Advanced Management Accounting	4 SWS	Lecture / 🗣	Wouters, Dickemann, Letmathe
Exams					
WT 24/25	79-2579907-M	Advanced Management Accounting			Wouters

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

Assessment
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.

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.

Additional Information
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).

Workload
135 hours

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

V Advanced Management Accounting

2579907, WS 24/25, 4 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
This course is held in English. Students who are interested in attending this course should send an e-mail to Professor Wouters (marc.wouters@kit.edu).

Inhalt:

- The course addresses several topics where management accounting is strongly related to marketing, finance, or organization and strategy, such as customer value propositions, financial performance measures, managing new product development, and technology investment decisions.

Learning objectives:

- Students will be able to consider advanced management accounting methods in an interdisciplinary way and to apply these to managerial decision-making problems in operations and innovation.
- They will also be able to identify relevant research results on such methods.

Examination:

- The assessment consists of an oral exam (30 min) taking place in the recess period (according to § 4 (2) No. 2 of the examination regulation).
- The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Required prior Courses:

- The course is compulsory and must be examined.

Recommendations:

- The course requires significant prior knowledge of Management Accounting, similar to the content of the courses MA 1 and 2, although completion of these particular courses is not a formal requirement.

Workload:

- The total workload for this course is approximately 135 hours. For further information see German version.

Literature
Literature is mostly made available via ILIAS.

T 3.17 Course: Advanced Programming - Application of Business Software [T-WIWI-102748]

Responsible: Prof. Dr. Stefan Klink
Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	2

Events					
WT 24/25	2511026	Advanced Programming - Application of Business Software	2 SWS	Lecture / 🗣	Klink
WT 24/25	2511027	Exercises Advanced Programming - Application of Business Software	1 SWS	Practice / 🗣	Ullrich
WT 24/25	2511028	Computer lab Advanced Programming - Application of Business Software	2 SWS	Practice / 🗣	Schreiber, Ullrich
Exams					
WT 24/25	7900019	Advanced Programming - Application of Business Software			Oberweis
ST 2025	7900049	Advanced Programming - Application of Business Software			Klink

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

Assessment
The success control takes place in the form of a written examination. The duration of the exam is 60 minutes. The examination is offered every semester and can be repeated at any regular examination date.
The prerequisite for taking the exam is successful participation in a computer lab during the lecture in the winter semester. Attendance is compulsory for individual dates of the computer lab. More detailed information on registration to the computer lab and exercise sessions will be announced in the first lecture and on the lecture homepage on ILIAS.
Admission to take the exam can only be acquired in the winter semester and is valid indefinitely.

Prerequisites
This course cannot be taken together with *Advanced Programming - Java Network Programming.*

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-WIWI-102747 - Advanced Programming - Java Network Programming must not have been started.

Recommendations
Knowledge of the course "Foundations of Informatics I und II" are helpful.

Workload
150 hours

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

V Advanced Programming - Application of Business Software

2511026, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Business information systems enable, support, and accelerate new forms of business processes and forms of organisation. They are the central infrastucture of the economy in the age of eBusiness. Thus, basic knowledge is given in lectures, in excersises and in the computer lab which deals with installation, configuration and parameterization of busines information systems. The course communicates profund knowledge in following topics:

- Analysis of cooperation scenarios and business process scenarios
- Selection of modelling methods according to defined criteria
- Implementation of business process modells and cooperation modells with the help of standard software
- Identification and assessment of challenges during the installation of information systems
- Economical evaluation of business information systems.

This course cannot be taken together with *Advanced Programming - Java Network Programming* [2511020].

Learning objectives:

Students

- explain basic concepts and principles of enterprise information systems,
- describe the components of enterprise information systems,
- assess economical aspects of such systems,
- asseapply standard software for modelling busines processes and for analysing them to given criteria.

Recommendations:

Knowledge of the courses "Grundlagen der Informatik I und II" are helpful.

Notes:

- No registration is required for the lecture
- An registration is required for the exercises for participation in the Computer Lab and the subsequent exam admission
- The registration phase for the exercises starts in the first week after lecture begin and ends with the first exercise session
- Important informations regarding the registration, exact dates and deadlines will be communicated on the lecture website (ILIAS)

Workload:

- Lecture 30h
- Exercise course 15h
- Review and preparation of lectures 23h
- Review and preparation of exercises 10h
- Computer Lab 30h
- Exam preparation 26h
- Exam 1h
- Total 135h
- Exercise courses are done by student tutors

Literature

- Schönthaler, Vossen, Oberweis, Karle: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer 2012.
- Hasenkamp, Stahlknecht: Einführung in die Wirtschaftsinformatik. Springer 2012.
- Hansen, Neumann: Wirtschaftsinformatik I. Grundlagen betrieblicher Informationsverarbeitung. UTB 2009.
- Mertens et al.: Grundzüge der Wirtschaftsinformatik. Springer 2012.

Weitere Literatur wird in der Vorlesung bekannt gegeben.

T 3.18 Course: Advanced Programming - Java Network Programming [T-WIWI-102747]

Responsible: Prof. Dr. Dietmar Ratz
Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	5

Events					
ST 2025	2511020	Advanced Programming - Java Network Programming	2 SWS	Lecture / 🗣	Ratz
ST 2025	2511021	Tutorium zu Programmierung kommerzieller Systeme - Anwendungen in Netzen mit Java	1 SWS	Tutorial (/ 🏵	Ratz, Stegmaier, Mütsch
ST 2025	2511023	Rechnerpraktikum zu Programmierung kommerzieller Systeme - Anwendungen in Netzen mit Java	2 SWS	/ 🏵	Ratz, Stegmaier, Mütsch
Exams					
WT 24/25	7900020	Advanced Programming - Java Network Programming			Ratz
ST 2025	7900041	Advanced Programming - Java Network Programming			Ratz

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

Assessment
At the end of the lecture period, a written examination (90 min.) is offered (according to §4(2), 1 SPO), for which - through successful participation in the exercises during the semester - admission must be obtained. The exact details will be announced in the lecture. The examination is offered every semester and can be repeated at any regular examination date.

A bonus can be earned through successful participation in the exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). Details will be announced in the lecture

Prerequisites
This course cannot be taken together with*Advanced Programming - Application of Business Software*[2511026].

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-WIWI-102748 - Advanced Programming - Application of Business Software must not have been started.

Additional Information
The registration for the participation in the computer lab (precondition for the exam participation) already takes place in the first lecture week!

Workload
135 hours

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

V Advanced Programming - Java Network Programming

2511020, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
In the lecture, the exercises and computer labs to this course the practical handling with the programming language Java dominating within the range of economical applications is obtained. The basis for this is the current language standard. The knowledge from the lecture Introduction to Programming with Java will be deepened and extended. This is done, among other things, by addressing commercially relevant topics such as object-oriented modeling and programming, class hierarchy and inheritance, threads, applications and applets, AWT and Swing components for graphical user interfaces, exception and event processing, lambda expressions, input/output via streams, applications in networks, Internet communication, client and server programming, remote method invocation, servlets, Java Server Pages and Enterprise Java Beans.

This course cannot be taken together with *Advanced Programming - Application of Business Software* [2540886/2590886].

Learning objectives:

- Students learn the practical use of the object-oriented programming language Java and are enabled to design and implement component-based Internet applications using the latest technologies and tools.
- The ability to select and design these methods and systems appropriate to the situation and to use them for solving problems is imparted.
- Students are empowered to find strategic and creative answers in the search for solutions to well-defined, concrete and abstract problems.

Workload:

The total workload for this course is approximately 150 hours.

Organizational issues
Die Anmeldung zur Teilnahme am Rechnerpraktikum (Vorbedingung zur Klausurteilnahme) findet bereits in der ersten Vorlesungswoche statt!

Literature
Ratz, D. Schulmeister-Zimolong, D. Seese, J. Wiesenberger. Grundkurs Programmieren in Java. 8. Aktualisierte und erweiterte Auflage, Hanser 2018.

Weiterführende Literatur:

- S. Zakhour, S. Hommel, J. Royal. Das Java Tutorial. Addison Wesley 2007
- W. Eberling, J. Lessner. Enterprise JavaBeans 3. Hanser Verlag 2007.
- R. Oechsle. Parallele und verteilte Anwendungen. 2. Auflage. Hanser Verlag 2007.
- Weitere Literatur wird in der Vorlesung bekannt gegeben.

T 3.19 Course: Advanced Statistics [T-WIWI-103123]

Responsible: Prof. Dr. Oliver Grothe
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2550552	Advanced Statistical Techniques, Including Multivariate and Simulation Methods	2 SWS	Lecture / 🗣	Grothe
WT 24/25	2550553	Exercises and Computer Labs in Advanced Statistical Techniques	2 SWS	Practice / 🗣	Kaplan
Exams					
WT 24/25	7900289	Advanced Statistical Techniques, Including Multivariate and Simulation Methods			Grothe
ST 2025	7900253	Advanced Statistical Techniques, Including Multivariate and Simulation Methods			Grothe

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

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

Prerequisites
None

Workload
135 hours

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

V Advanced Statistical Techniques, Including Multivariate and Simulation Methods

Lecture (V) On-Site

2550552, WS 24/25, 2 SWS, Language: English, Open in study portal

Literature
Skript zur Vorlesung

T 3.20 Course: Advanced Stochastic Optimization [T-WIWI-106548]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Oral examination	4,5 CP	graded	Irregular	2

Events					
WT 24/25	2500089	Advanced Stochastic Optimization	2 SWS	Lecture /	Rebennack
WT 24/25	2550468	Übung zu Advanced Stochastic Optimization	1 SWS	Practice /	Rebennack
Exams					
WT 24/25	7900025	Advanced Stochastic Optimization			Rebennack
ST 2025	7900034	Advanced Stochastic Optimization			Rebennack

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

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

Prerequisites
None.

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

Additional Information
Lectures and tutorials are offered irregularly.

Workload
135 hours

T 3.21 Course: Advanced Topics in Digital Management [T-WIWI-111912]

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each summer term	1

Events					
ST 2025	2573016	Advanced Topics in Digital Management	2 SWS	Colloquium (K / 🗣	Nieken, Mitarbeiter

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

Assessment
Alternative exam assessment. The following aspects are included:

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

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Recommendations
We recommend visiting the course Incentives in Organization before taking this course.
The course is strongly recommended for students interested in empirical research in the areas digital HRM, personnel economics, and leadership and those who are interest in an academic career path.

Workload
90 hours

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

V Advanced Topics in Digital Management

2573016, SS 2025, 2 SWS, Language: English, Open in study portal

Colloquium (KOL)
On-Site

Content
The students will discuss and analyze selected research papers in the areas digital HRM, personnel economics, and leadership with a focus on digital management. The students will present research papers and discuss research methods and designs as well as content. They will develop an own research design on a predefined topic.

Aim

The student

- Looks into current research topics in the areas HRM, personnel economics, and leadership with a focus on digital management and AI.
- Analyzes research papers in detail and evaluates the research outcomes.
- Trains their presentation skills and discussion skills.
- Practices scientific debating.
- Learns to critically evaluate research methods and trains the scientific discussion culture.
- Gains deeper knowledge in the area of digital HRM and management.
- Learns to evaluate research designs and takes into account the ethical dimension of research.
- Learns how to develop an own research design and idea.

Notes

Due to the interactive nature of the course, the number of participants is limited. If you are interested, please contact Prof. Nieken by email.

Workload

The total workload for this course is approximately 90 hours.

Lecture: 30 hours

Preparation: 45 hours

Exam preparation: 15 hours

Literature

Selected research papers

Organizational issues
Geb. 05.20, Raum 2A-25, Termine werden bekannt gegeben

T 3.22 Course: Advanced Topics in Economic Theory [T-WIWI-102609]

Responsible: Prof. Dr. Johannes Brumm
Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	1

Events					
ST 2025	2520527	Advanced Topics in Economic Theory	2 SWS	Lecture / 🗣	Mitusch, Brumm
ST 2025	2520528	Übung zu Advanced Topics in Economic Theory	1 SWS	Practice / 🗣	Pegorari, Corbo, Mitusch, Brumm
Exams					
ST 2025	00227	Advanced Topics in Economic Theory			Mitusch, Brumm

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

Assessment
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

Recommendations
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 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Literature
Die Veranstaltung wird in englischer Sprache angeboten:

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

T 3.23 Course: Advanced Topics in Human Resource Management [T-WIWI-111913]

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Irregular	1

Events					
WT 24/25	2573014	Advanced Topics in Human Resource Management	2 SWS	Colloquium (K / 🗣	Nieken, Mitarbeiter

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

Assessment
Alternative exam assessment.The following aspects are included:

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

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Recommendations
We recommend visiting the course Incentives in Organization before taking this course.
The course is strongly recommended for students interested in empirical research in the areas HRM, personnel economics, and leadership and those who are interest in an academic career path.

Additional Information
Teaching and learning format: Colloquium

Workload
90 hours

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

V Advanced Topics in Human Resource Management

2573014, WS 24/25, 2 SWS, Language: German, Open in study portal

Colloquium (KOL)
On-Site

Content
The students will discuss and analyze selected research papers in the areas HRM, personnel economics, and leadership. The students will present research papers and discuss research methods and designs as well as content. They will develop an own research design on a predefined topic.

Aim

The student

- Looks into current research topics in the areas HRM, personnel economics, and leadership.
- Analyzes research papers in detail and evaluates the research outcomes.
- Trains their presentation skills and discussion skills.
- Practices scientific debating.
- Learns to critically evaluate research methods and trains the scientific discussion culture.
- Gains deeper knowledge in the area of HRM.
- Learns to evaluate research designs and takes into account the ethical dimension of research.
- Learns how to develop an own research design and idea.

Notes

Due to the interactive nature of the course, the number of participants is limited. If you are interested, please contact Prof. Nieken by email.

Workload

The total workload for this course is approximately 90 hours.

Lecture: 30 hours

Preparation: 45 hours

Exam preparation: 15 hours

Literature

Selected research papers

Organizational issues
siehe Homepage

T 3.24 Course: AI Innovation Ecosystems [T-WIWI-113849]

Responsible: Dr. Daniela Beyer
Jennifer Scheydt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Irregular	1

Events					
WT 24/25	2500049	AI Innovation Ecosystems	2 SWS	Seminar /	Beyer, Weissenberger-Eibl
Exams					
WT 24/25	7900355	AI Innovation Ecosystems			Weissenberger-Eibl, Beyer

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

Assessment
Non exam assessment consisting of:

- (A) Discussion of literature on innovation ecosystems (15%)
  - Read articles / book chapters
  - Summarize core results in an excerpt
  - present
- (B) active participation in all 4 events
- (C) Presentation on an area of Cyber Valley or IPAI Heilbronn [in the group] (30%)
- (D) Preparation of a guided interview that can be conducted with a representative of IPAI / Cyber Valley [in the group] (15%)
- (E) Elaboration of the findings in the form of a seminar paper* from C and D on an evaluation of a partial aspect of the IPAI / Cyber Valley [term paper in the semester-free period based on the findings presented and the interview] (40%)

* Scope according to the current requirements for crediting in the seminar module

Prerequisites
None

Recommendations
It is recommended that the lecture: Innovation Management: Concepts, Strategies and Methods has already been attended.

Workload
90 hours

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

V AI Innovation Ecosystems

2500049, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Seminar (S)
Online

Content
This research seminar uses the example of three innovation clusters in Baden-Württemberg to analyse innovation ecosystems and their potential special features in the field of artificial intelligence. The practical seminar benefits from expert input, but also places a clear focus on research methods and scientific work. A toolbox will be developed together, including literature reviews and interview techniques, which will later facilitate the work on the Master's thesis.
Firstly, the concept of innovation ecosystems is examined. Despite the frequently used term, the state of the art is still relatively open and an overview can be developed together. Then, using the example of the AI Health Innovation Cluster, a cluster is presented and its political history, structure and goal (achievement) are analysed. In the following two sessions, the IPAI and Cyber Valley will be analysed by experts and groups of students.
Since the students will be responsible for much of the seminar themselves, in addition to practical and methodological inputs, a preliminary meeting will take place on 31 October (6-7 pm) to allow sufficient preparation time. The seminar will take place virtually.

T 3.25 Course: Algorithms I [T-INFO-100001]

Responsible: TT-Prof. Dr. Thomas Bläsius
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Written examination	6 CP	graded	Each summer term	1

Events					
ST 2025	24500	Algorithms I	4 SWS	Lecture / Practice (/ 🗣	Sanders, Uhl, Seemaier, Lehmann, Hübner, Schimek, Laupichler
Exams					
WT 24/25	7500117	Algorithms I			Bläsius
ST 2025	7500186	Algorithms I			Sanders

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

T 3.26 Course: Algorithms II [T-INFO-102020]

Responsible: Prof. Dr. Peter Sanders
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Written examination	6 CP	graded	Each winter term	1

Events					
WT 24/25	2424079	Algorithms II	4 SWS	Lecture / 🗣	Sanders, Maas, Hermann
Exams					
WT 24/25	7500245	Algorithms II			Sanders
ST 2025	7500464	Algorithms II			Sanders

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

Assessment
The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 120 minutes.

Prerequisites
none.

T 3.27 Course: Analalysis of Social Structurs (WiWi) [T-GEISTSOZ-109047]

Responsible: Prof. Dr. Gerd Nollmann
Organisation: KIT Department of Humanities and Social Sciences
Part of: M-WIWI-104906 - Social Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	1

Events					
WT 24/25	5011007	Analysis of Social Structures	2 SWS	Practice /	Nollmann
Exams					
WT 24/25	7400029	Analalysis of Social Structurs (WiWi)			Nollmann

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

T 3.28 Course: Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines [T-MACH-105173]

Responsible: Dr.-Ing. Marcus Gohl
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2134150	Gas, lubricating oil and operating media analysis in drive train development	2 SWS	Lecture / 🗣	Gohl
Exams					
WT 24/25	76-T-MACH-105173	Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines			Gohl, Koch
ST 2025	76--T-Mach-105173	Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines			Gohl

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

Assessment
Oral examination, duration approx. 25 min, no aids

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

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

V Gas, lubricating oil and operating media analysis in drive train development

Lecture (V) On-Site

2134150, SS 2025, 2 SWS, Language: German, Open in study portal

Literature
Die Vorlesungsunterlagen werden vor jeder Veranstaltung an die Studenten verteilt.

T 3.29 Course: Analysis of Multivariate Data [T-WIWI-103063]

Responsible: Prof. Dr. Oliver Grothe
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	1

Events					
ST 2025	2550550		2 SWS	Lecture / 🗣	Grothe
ST 2025	2550551		2 SWS	Practice / 🗣	Grothe, Liu
Exams					
WT 24/25	7900297	Analysis of Multivariate Data			Grothe
ST 2025	7900033	Analysis of Multivariate Data			Grothe

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

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

Prerequisites
None

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

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

Workload
135 hours

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

V 2550550, SS 2025, 2 SWS, Open in study portal — **Lecture (V) On-Site**

Literature
Skript zur Vorlesung

T 3.30 Course: Analysis Tools for Combustion Diagnostics [T-MACH-105167]

Responsible: Jürgen Pfeil
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2134134	Analysis tools for combustion diagnostics	2 SWS	Lecture / 🗣	Pfeil
Exams					
WT 24/25	76-T-MACH-105167	Analysis Tools for Combustion Diagnostics			Koch
ST 2025	76-T-MACH-105167	Analysis Tools for Combustion Diagnostics			Koch

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

Assessment
oral examination, Duration: 25 min., no auxiliary means

Prerequisites
none

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

V Analysis tools for combustion diagnostics

2134134, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

T 3.31 Course: Analytical CRM [T-WIWI-102596]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Assessment
The exam will be offered for first time writers for the last time 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

Recommendations
We expect knowledge about data models and the UML modelling language concerning information systems.

T 3.32 Course: Application of Social Science Methods (WiWi) [T-GEISTSOZ-109052]

Responsible: Prof. Dr. Gerd Nollmann
Organisation: KIT Department of Humanities and Social Sciences
Part of: M-WIWI-104906 - Social Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	9 CP	graded	Each term	2

Events					
ST 2025	5011006	Gender Pay Gap	2 SWS	Seminar /	Nollmann
ST 2025	5011008	Decomposition and Regression Analysis	2 SWS	Seminar /	Nollmann
Exams					
WT 24/25	7400048	Application of Social Science Methods (WiWi)			Nollmann
ST 2025	7400368	Application of Social Science Methods			Nollmann, Staudt
ST 2025	7400453	Application of Social Science Methods (WiWi)			Nollmann

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

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-GEISTSOZ-104565 - Computer Aided Data Analysis must have been passed.

T 3.33 Course: Applied Econometrics [T-WIWI-111388]

Responsible: Prof. Dr. Fabian Krüger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	2

Events					
WT 24/25	2520020	Applied Econometrics	2 SWS	Lecture / 🗣	Krüger, Eberl
WT 24/25	2520021	Tutorial in Applied Econometrics	2 SWS	Practice / 🗣	Eberl, Krüger
Exams					
WT 24/25	7900251	Applied Econometrics			Krüger
ST 2025	7900007	Applied Econometrics			Krüger

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

Assessment
The assessment of this course is a written examination (90 min).

Prerequisites
None

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

V Applied Econometrics

2520020, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The course starts with a concise review of core econometric topics (in particular, the linear regression model). It then presents methods for causal inference: The potential outcomes approach, methods for analyzing randomized controlled trials, and methods for analyzing observational data (e.g., regression discontinuity). Empirical examples and R code are used to illustrate the methodological concepts.

Learning goals

Students understand the properties of various econometric estimators and research designs, and can implement econometric estimators using R software.

Workload

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

Literature
The following book is the main reference for the course:

Ding, P. (2024). A First Course in Causal Inference. Routledge.

Further literature will be announced in class.

T 3.34 Course: Applied Informatics – Applications of Artificial Intelligence [T-WIWI-110340]

Responsible: Dr.-Ing. Tobias Käfer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	2

Events					
WT 24/25	2511314	Applied Informatics - Applications of Artificial Intelligence	2 SWS	Lecture /	Käfer, Kinder
WT 24/25	2511315	Exercises to Applied Informatics - Applications of Artificial Intelligence	1 SWS	Practice /	Käfer, Qu , Kinder
Exams					
WT 24/25	79AIFB_AKI_C1	Applied Informatics – Applications of Artificial Intelligence			Käfer
ST 2025	79AIFB_AKI_C1	Applied Informatics - Applications of AI (Registration until 21.07.2025)			Käfer

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

Assessment
Written Examination (60 min) according to §4, Abs. 2, 1 of the examination regulations or oral examination of 20 minutes according to §4, Abs. 2, 2 of the examination regulations. The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites
None.

Recommendations
Basics in logic, e.g. from lecture Foundations of Informatics 1 are important.

Workload
135 hours

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

V Applied Informatics - Applications of Artificial Intelligence

2511314, WS 24/25, 2 SWS, Language: German, Open in study portal

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

Content
The lecture provides insights into the fundamentals of artificial intelligence. Basic methods of artificial intelligence and their applications in industry are presented.

Applications of the AI is a sub-area of computer science dealing with the automation of intelligent behavior. In general, it is a question of mapping human intelligence. Methods of artificial intelligence are presented in various areas such as, for example, question answering systems, speech recognition and image recognition.

The lecture gives an introduction to the basic concepts of artificial intelligence. Essential theoretical foundations, methods and their applications are presented and explained.

This lecture aims to provide students with a basic knowledge and understanding of the structure, analysis and application of selected methods and technologies on artificial intelligence. The topics include, among others, knowledge modeling, machine learning, text mining, uninformed search, and intelligent agents.

Learning objectives:

The students

- consider current research topics in the field of artificial intelligence and in particular learn about the topics of knowledge modeling, machine learning, text mining and uninformed search.
- interdisciplinary thinking.
- technological approaches to current problems.

Workload:

- The total workload for this course is approximately 135 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 60 hours
- Exam and exam preperation: 30 hours

V **Exercises to Applied Informatics - Applications of Artificial Intelligence** **Practice (Ü) On-Site**
2511315, WS 24/25, 1 SWS, Language: German, Open in study portal

Content
The exercises are oriented on the lecture applications of AI.

Multiple exercises are held that capture the topics, held in the lecture Applications of AI and discuss them in detail. Thereby, practical examples are given to the students in order to transfer theoretical aspects into practical implementation.

This lecture aims to provide students with a basic knowledge and understanding of the structure, analysis and application of selected methods and technologies on artificial intelligence. The topics include, among others, knowledge modeling, machine learning, text mining, uninformed search, and intelligent agents.

Learning objectives:

The students

- consider current research topics in the field of artificial intelligence and in particular learn about the topics of knowledge modeling, machine learning, text mining and uninformed search.
- interdisciplinary thinking.
- technological approaches to current problems.

T 3.35 Course: Applied Informatics – Cybersecurity [T-WIWI-114156]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2511550	Applied Informatics – Cybersecurity	2 SWS	Lecture / 🗣	Volkamer
ST 2025	2511551	Exercise Applied Informatics – Cybersecurity	1 SWS	Practice / 🗣	Volkamer, Berens, Ballreich
Exams					
ST 2025	79AIFB_CS_A1	Applied Informatics – Cybersecurity (Registration until 21.07.2025)			Volkamer

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

Assessment
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (30 min) following §4, Abs. 2, 2 of the examination regulation, for which admission must be obtained through successful participation in the exercise during the semester.

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

Additional Information
Competence Goal

The student

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

Content

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

Workload
135 hours

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

V Applied Informatics – Cybersecurity **Lecture (V) On-Site**
2511550, SS 2025, 2 SWS, Open in study portal

Content

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

Learing objectives:

The student

- can explain the basics of information security
- knows suitable measures to achieve different protection goals
- can assess the quality of organisational protective measures, i. e. among other things knows what has to be taken into account when using the individual measures
- understands the differences between information security in the organisational and in the private context
- knows the areas of application of different standards and knows their weaknesses
- knows and can explain the problems of information security that which arise from human-machine interaction
- is able to deal with messages concerning found security problems in a critical way.

This course can also be credited for the KASTEL certificate. Further information about obtaining the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php).

Literature

- P. Gerber, M. Ghiglieri, B. Henhapl, O. Kulyk, K. Marky, P. Mayer, B. Reinheimer, and M. Volkamer, *Human Factors in Security*. Springer, Jan. 2018, pp. 83–98.
- C. Eckert, *IT-Sicherheit: Konzepte-Verfahren-Protokolle*. Walter de Gruyter, 2013

V Exercise Applied Informatics – Cybersecurity

Practice (Ü)
On-Site

2511551, SS 2025, 1 SWS, Open in study portal

Content

This course can also be credited for the KASTEL certificate. Further information about obtaining the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php).

T 3.36 Course: Applied Informatics – Database Systems [T-WIWI-110341]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	2

Events					
ST 2025	2511200	Applied Informatics - Database Systems	2 SWS	Lecture / 🗣	Sommer
ST 2025	2511201	Exercises Applied Informatics - Database Systems	1 SWS	Practice / 🗣	Sommer
Exams					
WT 24/25	79AIFB_DBS_C5	Applied Informatics – Database Systems			Oberweis
ST 2025	79AIFB_DBS_B1	Applied Informatics - Database Systems (Registration until 21.07.2025)			Oberweis

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

Assessment
The assessment consists of a written exam (60 minutes) in the first week after lecture period.

Additional Information
Replaces from summer semester 2020 T-WIWI-102660 "Database Systems".

Workload
135 hours

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

V Applied Informatics - Database Systems

2511200, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Database systems (DBS) play an important role in today's companies. Internal and external data is stored and processed in databases in every company. The proper management and organization of data helps to solve many problems, enables simultaneous queries from multiple users and is the organizational and operational base for the entire working procedures and processes of the company. The lecture leads in the area of the database theory, covers the basics of database languages and database systems, considers basic concepts of object-oriented and XML databases, conveys the principles of multi-user control of databases and physical data organization. In addition, it gives an overview of business problems often encountered in practice such as:

- Correctness of data (operational, semantic integrity)
- Restore of a consistent database state
- Synchronization of parallel transactions (phantom problem).

Learning objectives:

Students

- are familiar with the concepts and principles of data base models, languages and systems and their applications and explain it,
- design and model relational data bases on the basis of theoretical foundations,
- create queries for relational databases,
- know how to handle enhanced data base problems occurring in the enterprises.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

Literature

- Schlageter, Stucky. Datenbanksysteme: Konzepte und Modelle. Teubner 1983.
- S. M. Lang, P. C. Lockemann. Datenbankeinsatz. Springer-Verlag 1995.
- Jim Gray, Andreas Reuter. Transaction Processing: Concepts and Techniques. Morgan Kaufmann 1993.

Weitere Literatur wird in der Vorlesung bekannt gegeben.

V Exercises Applied Informatics - Database Systems

2511201, SS 2025, 1 SWS, Language: German, Open in study portal

Practice (Ü)
On-Site

Content
Database systems (DBS) play an enormously important role in today's companies. The internal and external data is stored and processed in the database of the respective company. The correct management and organization of this data helps to solve numerous problems, enables simultaneous queries by several users and is the organizational and operational basis for the entire workflows and processes of the company.

The lecture introduces the field of database theory, covers the basics of database languages and database systems, teaches the principles of multi-user database control and physical data organization. In addition, it provides an overview of database problems often encountered in business practice, such as the correctness of data (operational, semantic integrity), the recovery of a consistent database state, and the synchronization of parallel transactions.

Literature

Schlageter / Stucky: Datenbanksysteme: Konzepte und Modelle, 2. Auflage, Teubner, Stuttgart, 1983 P. C. Lockemann / J. W. Schmidt (Hrsg.): Datenbank-Handbuch, Springer-Verlag, 1987 S. Cannan / G. Otten: SQL - The Standard Handbook, McGraw-Hill, 1993 Jim Gray / Andreas Reuter: Transaction Processing: Concepts and Techniques, Morgan Kaufmann, 1993 S. M. Lang / P. C. Lockemann: Datenbankeinsatz, Springer-Verlag, 1995 Ramez Elmasri / Shamkant B. Navathe: Fundamentals of Database Systems, Addison-Wesley, 1994 und 2000

T 3.37 Course: Applied Informatics – Mobile Computing [T-WIWI-113957]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2511226	Applied Informatics - Mobile Computing	2 SWS	Lecture / 🗣	Schiefer
ST 2025	2511227	Exercises Applied Informatics - Mobile Computing	1 SWS	Practice / 🗣	Schiefer, Forell, Fritsch

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

Assessment
Success is assessed in the form of a written (60 min) or oral examination.

Prerequisites
None

Workload
135 hours

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

V Applied Informatics - Mobile Computing

2511226, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture covers the basics of mobile computing. These are interlinked with the economic background in Germany.

Contents are:

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

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

Learning objectives:

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

Market structures
technique
Possibilities for applications
lawsuits
issues

Workload:

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

Organizational issues
Aufgrund des mangelnden Interesses findet die Vorlsesung im SS 2025 nicht (mehr) statt.

Vorlesung und Übung werden integriert angeboten.

Literature

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

Einige relevante Informationen im Web

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

T 3.38 Course: Applied Informatics – Modelling [T-WIWI-110338]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	2

Events					
WT 24/25	2511030	Applied Informatics - Modelling	2 SWS	Lecture / 🗣	Schiefer, Schüler
WT 24/25	2511031	Exercises to Applied Informatics - Modelling	1 SWS	Practice / 🗣	Schiefer, Schüler
Exams					
WT 24/25	79AIFB_AI1_C4	Applied Informatics – Modelling			Oberweis
ST 2025	79AIFB_AI1	Applied Informatics - Modelling (Registration until 21 July 2025)			Oberweis

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

Assessment
The assessment consists of a written examination (60 min) in the first week after lecture period (according to Section 4 (2),1 of the examination regulation).

Prerequisites
None

Workload
135 hours

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

V Applied Informatics - Modelling

2511030, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
In the context of complex information systems, modelling is of central importance, e.g. – in the context of systems to be developed – for a better understanding of their functionality or in the context of existing systems for supporting maintenance and further development.

Modelling, in particular modelling of information systems, forms the core part of this lecture. The lecture is organized in two parts. The first part mainly covers the modelling of static aspectes, the second part covers the modelling of dynamic aspects of information systems.

The lecture sets out with a definition of modelling and the advantages of modelling. After that, advanced aspects of UML, the Entity Relationship model (ER model) and logics as a means of modelling static aspects will be explained. This will be complemented by the relational data model and the systematic design of databases based on ER models. For modelling dynamic aspects, different types of petri-nets together with their respective analysis techniques will be introduced.

Learning objectives:

Students

- explain the strengths and weaknesses of various modeling approachesfor Information Systems and choose an appropriate method for a given problem,
- create UML models, ER models and Petri nets for given problems,
- modelling given situations in propositional and predicate logic and can interpret them,
- analyze various properties in propositional and predicate logic,
- create and evaluate a relational database schema and express queries in relational algebra.

Workload:

- Total effort: 120-135 hours
- Presence time: 45 hours
- Self study: 75-90 hours

Literature

- Bernhard Rumpe. Modellierung mit UML, Springer-Verlag, 2004.
- R. Elmasri, S. B. Navathe. Fundamentals of Database Systems. Pearson Education 2009.
- W. Reisig. Petrinetze, Springer-Verlag, 2010.

Weiterführende Literatur:

- U. Kastens, H. Kleine Büning. Modellierung – Grundlagen und Formale Methoden. Carl Hanser Verlag, 2014
- J.L. Peterson. Petri Net Theory and Modeling of Systems, Prentice Hall, 1981.
- U. Schöning. Logik für Informatiker. Spektrum Akademischer Verlag, 2000

V Exercises to Applied Informatics - Modelling

Practice (Ü)
On-Site

2511031, WS 24/25, 1 SWS, Language: German, Open in study portal

Content
In the context of complex information systems, modelling is of central importance, e.g. – in the context of systems to be developed – for a better understanding of their functionality or in the context of existing systems for supporting maintenance and further development.

Modelling, in particular modelling of information systems, forms the core part of this lecture. The lecture is organized in two parts. The first part mainly covers the modelling of static aspectes, the second part covers the modelling of dynamic aspects of information systems.

The lecture sets out with a definition of modelling and the advantages of modelling. After that, advanced aspects of UML, the Entity Relationship model (ER model) and logics as a means of modelling static aspects will be explained. This will be complemented by the relational data model and the systematic design of databases based on ER models. For modelling dynamic aspects, different types of petri-nets together with their respective analysis techniques will be introduced.

Learning objectives:

Students

- explain the strengths and weaknesses of various modeling approachesfor Information Systems and choose an appropriate method for a given problem,
- create UML models, ER models and Petri nets for given problems,
- modelling given situations in propositional and predicate logic and can interpret them,
- analyze various properties in propositional and predicate logic,
- create and evaluate a relational database schema and express queries in relational algebra.

Workload:

- Total effort: 120-135 hours
- Presence time: 45 hours
- Self study: 75-90 hours

Organizational issues
Bei Bedarf wird ein Tutorium online angeboten.

Literature

-
  - Bernhard Rumpe. Modellierung mit UML, Springer-Verlag, 2004.
  - R. Elmasri, S. B. Navathe. Fundamentals of Database Systems. Pearson Education 2009.
  - W. Reisig. Petrinetze, Springer-Verlag, 2010.

  Weiterführende Literatur:
  - U. Kastens, H. Kleine Büning. Modellierung – Grundlagen und Formale Methoden. Carl Hanser Verlag, 2014
  - J.L. Peterson. Petri Net Theory and Modeling of Systems, Prentice Hall, 1981.
  - U. Schöning. Logik für Informatiker. Spektrum Akademischer Verlag, 2000

T 3.39 Course: Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services [T-WIWI-110339]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	see Annotations	2

Events					
ST 2025	2511032	Applied Informatics - Internet Computing	2 SWS	Lecture / 🗣	Lins, Kannengießer, Schmidt-Kraepelin, Sturm, Thiebes
ST 2025	2511033	Übungen zu Angewandte Informatik - Internet Computing	1 SWS	Practice / 🧩	Lins, Kannengießer, Schmidt-Kraepelin, Sturm, Thiebes, Guse, Rank
Exams					
WT 24/25	79AIFB_AI-IC_B4	Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services			Sunyaev
ST 2025	79AIFB_AI2	Applied Informatics - Internet Computing (Registration until 16.09.2025)			Sunyaev

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

Assessment
The examination will be offered for the last time in the summer semester 2025 for first-time students. The last examination opportunity (only for repeaters) is in the winter semester 2025/2026.

Success is assessed in the form of a written examination (60 minutes) in accordance with §4(2),1 SPO.

Successful completion of the exercises is recommended for the written exam, which is offered at the end of the winter semester and at the end of the summer semester.

A grade bonus can be earned for successful participation in the exercises by submitting correct solutions to 50% of the exercises set. 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

Additional Information
The lecture "Applied Computer Science - Internet Computing" (Prof. Dr. A. Sunyaev) will be held for the last time in the summer semester 2025.

Workload
135 hours

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

V Applied Informatics - Internet Computing

2511032, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

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

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

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

Learning objectives:

The student learns about basic concepts and emerging technologies of distributed systems and internet computing. Practical topics will be deepened in lab classes.

Recommendations:

Knowledge of content of the module [WI1INFO].

Workload:

The total workload for this course is approximately 135-150 hours.

Organizational issues
Bitte beachten Sie: **Die Prüfung "Angewandte Informatik – Internet Computing" wird für Erstschreiber letztmals im Sommersemester 2025 angeboten.** Die letzte Prüfungsmöglichkeit (nur für Wiederholer) besteht im Wintersemester 2025/2026.
Die Vorlesung "Angewandte Informatik – Internet Computing" (Prof. Dr. A. Sunyaev) wird durch die neue Vorlesung "Angewandte Informatik – Cybersicherheit" (Prof. Dr. M. Volkamer) ersetzt.

Literature
Wird in der Vorlesung bekannt gegeben

T 3.40 Course: Applied Informatics – Software Engineering [T-WIWI-110343]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	see Annotations	2

Exams			
WT 24/25	79AIFB_SE_B1	Applied Informatics – Software Engineering	Oberweis
ST 2025	79AIFB_SE_B3	Applied Informatics - Software Engineering (Registration until 21.07.2025)	Oberweis

Assessment
The examination will be offered for the last time in the summer semester 2025 for first-time students. The last examination opportunity (only for repeaters) is in the winter semester 2025/2026. The assessment takes the form of a written examination (60 minutes) in accordance with §4(2), 1 SPO. It takes place in the first week after the lecture period.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-WIWI-100809 - Software Engineering must not have been started.

Additional Information
The lecture will no longer be offered from summer semester 2025. Parts of the lecture will be integrated into the new course "Applied Computer Science - Mobile Computing".

Workload
135 hours

T 3.41 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	2

Events					
WT 24/25	2595650	Artificial Intelligence in Service Systems	1.5 SWS	Lecture /	Kühl, Spitzer, Holstein
WT 24/25	2595651	Übung zu Artificial Intelligence in Service Systems	1.5 SWS	Practice /	Kühl, Spitzer, Holstein
Exams					
WT 24/25	7900033	Artificial Intelligence in Service Systems			Satzger
ST 2025	7900204	Artificial Intelligence in Service Systems			Satzger

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

Assessment
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

Additional Information
The course will be offered in the form of a flipped classroom concept starting in winter semester 2022/2023. The lecture will be recorded in advance and made available online. During the exercise classes, the contents of the lecture will be discussed and applied as part of programming exercises.

Workload
135 hours

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

V Artificial Intelligence in Service Systems

2595650, WS 24/25, 1.5 SWS, Language: English, Open in study portal

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

Content
Artificial Intelligence (AI) and the application of machine learning is becoming more and more popular to solve relevant business challenges — both within isolated entities but also within co-creating systems (like value chains). However, it is not only essential to be familiar with precise algorithms but rather a general understanding of the necessary steps with a holistic view—from real-world challenges to the successful deployment of an AI-based solution. As part of this course, we teach the complete lifecycle of an AI project focusing on supervised machine learning challenges. We do so by also introducing the use of Python and the required packages like scikit-learn with exemplary data and use cases. We then take this knowledge to the more complex case of service systems with different entities (e.g., companies) who interact with each other and show possibilities on how to derive holistic insights. Apart from the technical aspects necessary when developing AI within service systems, we also shed light on the collaboration of humans and AI in such systems (e.g., with the support of XAI), topics of ethics and bias in AI, as well as AI's capabilities on being creative.

Students of this course will be able to understand and implement the complete lifecycle of a typical Artificial Intelligence use case with supervised machine learning. Furthermore, they understand the importance and the means of applying AI and Machine Learning within service systems, which allows multiple, independent entities to collaborate and derive insights. Besides technical aspects, they will gain an understanding of the broader challenges and aspects when dealing with AI. Students will be proficient with typical Python code for AI challenges.

Organizational issues
The course will be offered in the form of a flipped classroom concept starting in winter semester 2022/2023. The lecture will be recorded in advance and made available online. During the exercise classes, the contents of the lecture will be discussed and applied as part of programming exercises.

Literature

- Baier, L., Kühl, N., & Satzger, G. (2019). How to cope with change?-preserving validity of predictive services over time. In Proceedings of the 52nd Hawaii International Conference on System Sciences.
- Cawley, G. C., & Talbot, N. L. (2010). On over-fitting in model selection and subsequent selection bias in performance evaluation. The Journal of Machine Learning Research, 11, 2079-2107.
- Fink, O., Netland, T., & Feuerriegel, S. (2021). Artificial intelligence across company borders. arXiv preprint arXiv:2107.03912.
- Gama, J., Žliobaitė, I., Bifet, A., Pechenizkiy, M., & Bouchachia, A. (2014). A survey on concept drift adaptation. ACM computing surveys (CSUR), 46(4), 1-37.
- Hemmer, P., Schemmer, M., Vössing, M., & Kühl, N. (2021). Human-AI Complementarity in Hybrid Intelligence Systems: A Structured Literature Review. PACIS 2021 Proceedings.
- Hirt, R., & Kühl, N. (2018). Cognition in the Era of Smart Service Systems: Inter-organizational Analytics through Meta and Transfer Learning. In 39th International Conference on Information Systems, ICIS 2018; San Francisco Marriott MarquisSan Francisco; United States; 13 December 2018 through 16 December 2018.
- Holstein, J., Spitzer, P., Hoell, M., Vössing, M., & Kühl, N. (2024). Understanding Data Understanding: A Framework to Navigate the Intricacies of Data Analytics. In European Conference on Information Systems (ECIS 2024), Paphos, Cyprus, 13-19 June, 2024.
- Kühl, N., Goutier, M., Hirt, R., & Satzger, G. (2019, January). Machine Learning in Artificial Intelligence: Towards a Common Understanding. In Proceedings of the 52nd Hawaii International Conference on System Sciences.
- Kühl, N., Hirt, R., Baier, L., Schmitz, B., & Satzger, G. (2021). How to Conduct Rigorous Supervised Machine Learning in Information Systems Research: The Supervised Machine Learning Report Card. Communications of the Association for Information Systems, 48(1), 46.
- Maleshkova, M., Kühl, N., & Jussen, P. (Eds.). (2020). Smart Service Management: Design Guidelines and Best Practices. Springer Nature.
- Martin, D., Hirt, R., & Kühl, N. (2019). Service Systems, Smart Service Systems and Cyber-Physical Systems—What's the difference? Towards a Unified Terminology. 14. Internationale Tagung Wirtschaftsinformatik 2019 (WI 2019), Siegen, Germany, February 24-27.
- Mehrabi, N., Morstatter, F., Saxena, N., Lerman, K., & Galstyan, A. (2019). A survey on bias and fairness in machine learning. arXiv preprint arXiv:1908.09635.
- Schemmer, M., Bartos, A., Spitzer, P., Hemmer, P., Kühl, N., Liebschner, J., & Satzger, G. (2023). Towards Effective Human-AI Decision-Making: The Role of Human Learning in Appropriate Reliance on AI Advice. In Proceedings of the 44th International Conference on Information Systems (ICIS2023), Hyderabad, India.
- Schöffer, J., Machowski, Y., & Kühl, N. (2021). A Study on Fairness and Trust Perceptions in Automated Decision Making. In Joint Proceedings of the ACM IUI 2021 Workshops, April 13–17, 2021, College Station, USA.
- Spitzer, P., Kühl, N., Goutier, M., Kaschura, M., & Satzger, G. (2024). Transferring Domain Knowledge with (X) AI-Based Learning Systems. In European Conference on Information Systems (ECIS 2024), Paphos, Cyprus, 13-19 June, 2024.
- Zahn, M. V., Feuerriegel, S., & Kühl, N. (2021). The cost of fairness in AI: Evidence from e-commerce. Business & information systems engineering.

T 3.42 Course: Artificial Intelligence in Service Systems II: Generative AI Applications & Adoption [T-WIWI-114209]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2595501	Artificial Intelligence in Service Systems - Generative AI Applications and Adoption	3 SWS	Lecture / 🗣	Holstein, Spitzer, Satzger
Exams					
ST 2025	7900373	Artificial Intelligence in Service Systems II: Generative AI Applications & Adoption			Satzger

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

Assessment
Success is assessed in the form of an examination of another type. The following aspects are included in the assessment:

- Collaborative development of a prototype as a group task
- Group presentation of the developed prototype
- Group report detailing the prototype and its development

Further details on the organization of the performance and the points system for the assessment will be announced in the lecture.

Additional Information
This course is admission restricted (see https://dsi.win.kit.edu/index.php). You can apply for this course via the Wiwi-Portal.
The course replaces T-WIWI-111219 "Artificial Intelligence in Service Systems - Applications in Computer Vision" as of summer semester 2025.

Workload
135 hours

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

V Artificial Intelligence in Service Systems - Generative AI Applications and Adoption

2595501, SS 2025, 3 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content

---We renamed this course from "Artificial Intelligence in Service Systems - Applications in Computer Vision" to "Artificial Intelligence in Service Systems - Generative AI Applications and Adoption" ---

Learning objectives

This course provides deepens the students's theoretical knowledge and practical skills in developing AI-based services. It adds "state-of-the-art" generative AI technologies and the focus on integrating AI-based services into larger service systems and organizational workflows. Students will not only learn core theoretical concepts and frameworks, but also engage in team projects to gain hands-on experience in implementing and adapting these services for human adoption.

Description

This course builds on the course "Artificial Intelligence in Service Systems" (LV-Nr.: 2595650) and applies the "end-to-end" development of AI-based services to particular team projects with two key objectives: (1) capturing new Generative AI methods, but also (2) focus on the integration of the service in organizational workflows and the necessary adoption by humans. Starting with the fundamentals of generative AI, students work with Large Language Models (LLMs) and multimodal architectures to develop practical applications. Building on these implementations, the course investigates how to integrate these services into organizational workflows and information systems, focusing on user interaction, system transparency, and human-AI collaboration mechanisms.
Through a group project, students apply their learning by first implementing a technical artifact to address real-world challenges, then identifying and applying appropriate metrics to design and evaluate adoption while considering human factors such as user acceptance, trust, workflow integration, and ethical implications. This hands-on approach provides students with practical experience in both technical implementation and organizational integration of AI-based services.

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

- Group-based project work
- Flipped classroom format with pre-recorded lectures
- Three full-day block sessions for in-depth discussions and optional hands-on coding exercises

Literature

- Baltrušaitis, T., Ahuja, C. and Morency, L.P., 2018. Multimodal machine learning: A survey and taxonomy. *IEEE transactions on pattern analysis and machine intelligence*, *41*(2), pp.423-443
- Chang, Y., Wang, X., Wang, J., Wu, Y., Yang, L., Zhu, K., Chen, H, Yi, X., Wang, C., Wang, Y., Ye, W., Zhang, Y., Chang, Y., Yu, P, Yang, Q., and Xie, X. (2024). A Survey on Evaluation of Large Language Models. ACM Trans. Intell. Syst. Technol. 15, 3, Article 39 (June 2024), 45 pages.
- Fourney, A., Bansal, G., Mozannar, H., Tan, C., Salinas, E., Niedtner, F., Proebsting, G., Bassman, G., Gerrits, J., Alber, J. and Chang, P., 2024. Magentic-one: A generalist multi-agent system for solving complex tasks. *arXiv preprint arXiv:2411.04468*.
- Hemmer, P., Schemmer, M., Kühl, N., Vössing, M., & Satzger, G. (2024). Complementarity in Human-AI Collaboration: Concept, Sources, and Evidence. *arXiv preprint arXiv:2404.00029*.
- Kreuzberger, D., Kühl, N. and Hirschl, S., 2023. Machine learning operations (mlops): Overview, definition, and architecture. *IEEE access*, *11*, pp.31866-31879.
- Schemmer, M., Kuehl, N., Benz, C., Bartos, A., & Satzger, G. (2023, March). Appropriate reliance on AI advice: Conceptualization and the effect of explanations. In *Proceedings of the 28th International Conference on Intelligent User Interfaces* (pp. 410-422).
- Zhang, Y., Li, Y., Cui, L., Cai, D., Liu, L., Fu, T., Huang, X., Zhao, E., Zhang, Y., Chen, Y., Wang, L., Luu, A.T., Bi, W., Shi, F., & Shi, S. (2023). Siren's Song in the AI Ocean: A Survey on Hallucination in Large Language Models. *ArXiv, abs/2309.01219*.

T 3.43 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	2

Events					
ST 2025	2530555	Asset Pricing	2 SWS	Lecture / 🗣	Uhrig-Homburg, Thimme
ST 2025	2530556	Asset Pricing Exercices	1 SWS	Practice / 🗣	Böll, Uhrig-Homburg, Thimme
Exams					
WT 24/25	7900056	Asset Pricing			Uhrig-Homburg
ST 2025	7900110	Asset Pricing			Uhrig-Homburg, Thimme

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

Assessment
Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination or as an open-book examination (alternative exam assessment).

A bonus can be earned by correctly solving at least 50% of the posed bonus exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites
None

Recommendations
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 Exercices** — **Practice (Ü) On-Site**
2530556, SS 2025, 1 SWS, Language: German, Open in study portal

T 3.44 Course: Auction & Mechanism Design [T-WIWI-102876]

Responsible: Dr. Frank Rosar
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2560550	Digitale Märkte und Mechanismen	2 SWS	Lecture / 🗣	Rosar
ST 2025	2560551	Übung zu Digitale Märkte und Mechanismen	1 SWS	Practice / 🗣	Rosar
Exams					
WT 24/25	7900007	Exam Digitale Märkte und Mechanismen (2)			Puppe
ST 2025	7900161	Exam Digitale Märkte und Mechanismen			Puppe

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

Assessment
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

A bonus can be earned through successful participation in the excercise. 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

Recommendations
Basic knowledge of microeconomics and statistics are recommended. A background in game theory is helpful, but not absolutely necessary.

Additional Information
The course is held in English.

The course will be replaced by T-WIWI-114598 "Digital Markets and Mechanisms" from winter semester 2025/2026.

T 3.45 Course: Auction Theory [T-WIWI-102613]

Responsible: Prof. Dr. Karl-Martin Ehrhart
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2520408	Auction Theory	2 SWS	Lecture	Ehrhart
WT 24/25	2520409	Auction Theory Exercise	1 SWS	Practice	Ehrhart
Exams					
WT 24/25	7900028	Auction Theory			Ehrhart
ST 2025	7900255	Auction Theory			Ehrhart

Assessment
The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.

The exam is offered each semester.

Prerequisites
None

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

V Auction Theory

2520408, WS 24/25, 2 SWS, Open in study portal **Lecture (V)**

Literature

- Ehrhart , K.-M. und S. Seifert: Auktionstheorie, Skript zur Vorlesung, KIT, 2011
- Krishna, V.: Auction Theory, Academic Press, Second Edition, 2010
- Milgrom, P.: Putting Auction Theory to Work, Cambridge University Press, 2004
- Ausubel, L.M. und P. Cramton: Demand Reduction and Inefficiency in Multi-Unit Auctions, University of Maryland, 1999

T 3.46 Course: Automated Financial Advisory [T-WIWI-106495]

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each summer term	1

Assessment
The grade consists of a written thesis and an oral presentation.

Prerequisites
There are two conditions for taking this course:

1. This course is only open for registered students of the module “Disruptive FinTech Innovations”.
2. Registered students do also attend in the same semester the lecture “Engineering FinTech Solutions” and the programming internship “Computational FinTech with Python and C++”.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-WIWI-106193 - Engineering FinTech Solutions must have been started.

Workload
90 hours

T 3.47 Course: Automated Manufacturing Systems [T-MACH-102162]

Responsible: Prof. Dr.-Ing. Jürgen Fleischer
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	9 CP	graded	Each summer term	2

Exams			
WT 24/25	76-T-MACH-102162	Automated Manufacturing Systems	Fleischer
ST 2025	76-T-MACH-102162	Automated Manufacturing Systems	Fleischer

Assessment
written exam (120 minutes)

Prerequisites
"T-MACH-108844 - Automatisierte Produktionsanlagen" must not be commenced.

Workload
270 hours

T 3.48 Course: Automotive Engineering I [T-MACH-100092]

Responsible: Dr.-Ing. Martin Gießler
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Language	Version
Written examination	8 CP	graded	Each winter term	1 terms		3

Events					
WT 24/25	2113805	Automotive Engineering I	4 SWS	Lecture / 🗣	Gießler
WT 24/25	2113809	Automotive Engineering I	4 SWS	Lecture / 🗣	Gießler
Exams					
WT 24/25	76-T-MACH-100092	Automotive Engineering			Gießler
ST 2025	76-T-MACH-100092	Automotive Engineering			Gießler

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

Assessment
Written examination

Duration: 120 minutes

Auxiliary means: none

Prerequisites
The brick "T-MACH-102203 - Automotive Engineering I" is not started or finished. The bricks "T-MACH-100092 - Grundlagen der Fahrzeugtechnik I" and "T-MACH-102203 - Automotive Engineering I" can not be combined.

Workload
240 hours

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

V Automotive Engineering I

2113805, WS 24/25, 4 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
1. History and future of the automobile

2. Driving mechanics: driving resistances and driving performance, mechanics of longitudinal and lateral forces, active and passive safety

3. Drive systems: combustion engine, hybrid and electric drive systems

4. Transmission: clutches (e.g. friction clutch, visco clutch), transmission (e.g. mechanical transmission, hydraulic fluid transmission)

5. Power transmission and distribution: drive shafts, cardon joints, differentials

Learning Objectives:

The students know the movements and the forces at the vehicle and are familiar with active and passive safety. They have proper knowledge about operation of engines and alternative drives, the necessary transmission between engine and drive wheels and the power distribution. They have an overview of the components necessary for the drive and have the basic knowledge, to analyze, to evaluate, and to develop the complex system "vehicle".

Organizational issues
Das Vorlesungsmaterial wird auf ILIAS bereitgestellt. Das ILIAS-Passwort erhalten Sie unter https://fast-web-01.fast.kit.edu/PasswoerterIlias/

Kann nicht mit der Veranstaltung [2113809] kombiniert werden.

Can not be combined with lecture [2113809].

Literature
1. Mitschke, M. / Wallentowitz, H.: Dynamik der Kraftfahrzeuge, Springer Vieweg, Wiesbaden 2014

2. Pischinger, S. / Seiffert, U.: Handbuch Kraftfahrzeugtechnik, Springer Vieweg, Wiesbaden 2016

3. Gauterin, F. / Unrau, H.-J. / Gnadler, R.: Scriptum zur Vorlesung "Grundlagen der Fahrzeugtechnik I", KIT, Institut für Fahrzeugsystemtechnik, Karlsruhe, jährlich aktualisiert

V Automotive Engineering I

Lecture (V)
On-Site

2113809, WS 24/25, 4 SWS, Language: English, Open in study portal

Content
1. History and future of the automobile

2. Driving mechanics: driving resistances and driving performances, mechanics of longitudinal and lateral forces, active and passive safety

3. Drive systems: combustion engine, hybrid and electric drive systems

4. Transmission: clutches (e.g. friction clutch, visco clutch), transmission (e.g. mechanical transmission, hydraulic fluid transmission)

5.Power transmission and distribution: drive shafts, cardon joints, differentials

Learning Objectives:

The students know the movements and the forces at the vehicle and are familiar with active and passive safety. They have proper knowledge about operation of engines and alternative drives, the necessary transmission between engine and drive wheels and the power distribution. They have an overview of the components necessary for the drive and have the basic knowledge, to analyze, to evaluate, and to develop the complex system "vehicle".

Organizational issues
You will find the lecture material on ILIAS. To get the ILIAS password, KIT students refer to https://fast-web-01.fast.kit.edu/PasswoerterIlias/, students from eucor universities send an e-mail to martina.kaiser@kit.edu

Kann nicht mit LV Grundlagen der Fahrzeugtechnik I [2113805] kombiniert werden.

Can not be combined with lecture [2113805] Grundlagen der Fahrzeugtechnik I.

Literature
1. Robert Bosch GmbH: Automotive Handbook, 9th Edition, Wiley, Chichister 2015

2. Onori, S. / Serrao, L: / Rizzoni, G.: Hybrid Electric Vehicles - Energy Management Strategies, Springer London, Heidelberg, New York, Dordrecht 2016

3. Reif, K.: Brakes, Brake Control and Driver Assistance Systems - Function, Regulation and Components, Springer Vieweg, Wiesbaden 2015

4. Gauterin, F. / Gießler, M. / Gnadler, R.: Scriptum zur Vorlesung 'Automotive Engineering I', KIT, Institut für Fahrzeugsystemtechnik, Karlsruhe, jährlich aktualisiert

T 3.49 Course: Automotive Engineering II [T-MACH-102117]

Responsible: Dr.-Ing. Martin Gießler
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2114835	Automotive Engineering II	2 SWS	Lecture / 🗣	Gießler
ST 2025	2114855	Automotive Engineering II	2 SWS	Lecture / 🗣	Gießler
Exams					
WT 24/25	76-T-MACH-102117	Automotive Engineering II			Gießler
WT 24/25	76T-MACH-102117-2	Automotive Engineering II			Gießler
ST 2025	76-T-MACH-102117	Automotive Engineering II			Gießler

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

Assessment
Written Examination

Duration: 90 minutes

Auxiliary means: none

Prerequisites
none

Workload
120 hours

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

V Automotive Engineering II

2114835, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
1. Chassis: Wheel suspensions (rear axles, front axles, kinematics of axles), tyres, springs, damping devices
2. Steering elements: Manual steering, servo steering, steer by wire
3. Brakes: Disc brake, drum brake, comparison of designs

Learning Objectives:

The students have an overview of the modules which are necessary for the tracking of a motor vehicle and the power transmission between vehicle bodywork and roadway. They have knowledge of different wheel suspensions, tyres, steering elements, and brakes. They know different design versions, functions and the influence on driving and braking behavior. They are able to correctly develop the appropriate components. They are ready to analyze, to evaluate, and to optimize the complex interaction of the different components under consideration of boundary conditions.

Organizational issues
Kann nicht mit der Veranstaltung [2114855] kombiniert werden.

Can not be combined with lecture [2114855]

Literature

1. Heißing, B. / Ersoy, M.: Fahrwerkhandbuch: Grundlagen, Fahrdynamik, Komponenten, Systeme, Mechatronik, Perspektiven, Springer Vieweg, Wiesbaden, 2013

2. Breuer, B. / Bill, K.-H.: Bremsenhandbuch: Grundlagen - Komponenten - Systeme - Fahrdynamik, Springer Vieweg, Wiesbaden, 2017

3. Unrau, H.-J. / Gnadler, R.: Scriptum zur Vorlesung 'Grundlagen der Fahrzeugtechnik II', KIT, Institut für Fahrzeugsystemtechnik, Karlsruhe, jährliche Aktualisierung

V Automotive Engineering II

Lecture (V)
On-Site

2114855, SS 2025, 2 SWS, Language: English, Open in study portal

Content

1. Chassis: Wheel suspensions (rear axles, front axles, kinematics of axles), tyres, springs, damping devices
2. Steering elements: Manual steering, servo steering, steer by wire
3. Brakes: Disc brake, drum brake, comparison of the designs

Learning Objectives:

The students have an overview of the modules which are necessary for the tracking of a motor vehicle and the power transmission between vehicle and roadway. They have knowledge of different wheel suspensions, tyres, steering elements, and brakes. They know different design versions, functions and the influence on driving and braking behavior. They are able to correctly develop the appropriate components. They are ready to analyze, to evaluate, and to optimize the complex interaction of the different components under consideration of boundary conditions.

Literature
Elective literature:

1. Robert Bosch GmbH: Automotive Handbook, 9th Edition, Wiley, Chichester 2015
2. Heißing, B. / Ersoy, M.: Chassis Handbook - fundamentals, driving dynamics, components, mechatronics, perspectives, Vieweg+Teubner, Wiesbaden 2011
3. Gießler, M. / Gnadler, R.: Script to the lecture "Automotive Engineering II", KIT, Institut of Vehicle System Technology, Karlsruhe, annual update

T 3.50 Course: B2B Sales Management [T-WIWI-111367]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2572187	B2B Sales Management	2 SWS	Lecture / 🗣	Klarmann
WT 24/25	2572188	Excercises B2B Sales Management	1 SWS	Practice / 🗣	Gerlach, Daumann
Exams					
WT 24/25	7900125	B2B Sales Management			Klarmann
ST 2025	7900021	B2B Sales Management			Klarmann

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

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

Prerequisites
None.

Additional Information
For further information, please contact Marketing and Sales Research Group (marketing.iism.kit.edu).

Workload
135 hours

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

V B2B Sales Management

2572187, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Content

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

Topics with regard to B2B sales management are:

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

Learning objectives

Students

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

Workload

The total workload for this course is approximately 135.0 hours.
Attendance time: 35.0 hours
Self-study: 100.0 hours

Organization

A detailed schedule will be announced.

Literature

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

T 3.51 Course: Bachelor's Thesis [T-WIWI-103067]

Responsible: Studiendekan des KIT-Studienganges
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101601 - Module Bachelor's Thesis

Type	Credits	Grading	Version
Final Thesis	12 CP	graded	1

Assessment
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	1 months
Correction period	6 weeks

T 3.52 Course: Basic Principles of Economic Policy [T-WIWI-103213]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	see Annotations	1

Events					
ST 2025	2560280	Basic Principles of Economic Policy	2 SWS	Lecture / 🗣	Ott
ST 2025	2560281	Exercises of Basic Principles of Economic Policy	1 SWS	Practice / 🗣	Zoroglu, Ghoniem
Exams					
WT 24/25	7900079	Basic Principles of Economic Policy			Ott
ST 2025	7900106	Basic Principles of Economic Policy			Ott

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

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

Prerequisites
None

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

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

Description:

Theory of general economic policy and discussion of current economic policy topics:

- Goals of economic policy,
- Instruments and institutions of economic policy,
- Triad of regional, national and European economic policies,
- special fields of economic policy, in particular growth, employment, provision of public infrastructure and climate policy.

Learning objectives:

Students learn:

- To apply basic concepts of micro- and macroeconomic theories to economic policy issues.
- to develop arguments on how state intervention in the market can be legitimized from a welfare economic perspective
- to derive theory-based policy recommendations.

Learning content:

- Market interventions: microeconomic perspective
- Market interventions: macroeconomic perspective
- Institutional economic aspects
- Economic policy and welfare economics
- Economic policy makers: Political-economic aspects

Workload:

- Total effort at 4.5 LP: approx. 135 hours
- Presence time: approx. 30 hours
- Self-study: approx. 105 hours

Media:

See course announcement

References:

See course announcement

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

V **Basic Principles of Economic Policy** **Lecture (V)**
2560280, SS 2025, 2 SWS, Language: German, Open in study portal **On-Site**

Content
The lecture deals with theories of general economic policy and discussion of current economic policy topics:

- Goals of economic policy,
- Instruments and institutions of economic policy,
- Triad of regional, national and European economic policies,
- special fields of economic policy, in particular growth, employment, provision of public infrastructure and climate policy.

Learning objectives:

Students shall be given the ability to

- apply basic concepts of micro- and macroeconomic theories to economic policy issues
- develop arguments on how state intervention in the market can be legitimized from a welfare economic perspective
- derive theory-based policy recommendations

Recommendations:

Basic micro- and macroeconomic knowledge is required, especially as taught in the courses Economics I [2610012] and Economics II [2600014].

Workload:

Total effort at 4.5 LP is approx. 135 hours and consists of:

- Presence time: approx. 30 hours
- Self-study: approx. 105 hours

Assessment:

The examination takes place in the form of a written examination (60min) (according to §4(2), 1 SPO). The examination is offered every semester and can be repeated at any regular examination date.

Organizational issues
Zugehörige Veranstaltung: Übungen zur Einführung in die Wirtschaftspolitik [2560281]
Vorbereitungsmaterialien finden Sie im Ilias.

Literature

- Klump, Rainer (2013): Wirtschaftspolitik. Pearson Studium
- Baldwin, Richard und Charles Wyplosz (2019): The Economics of European Integration, 6. Edition, McGraw-Hill Education, London
- Foliensatz zur Vorlesung
- Übungsaufgaben

V Exercises of Basic Principles of Economic Policy

2560281, SS 2025, 1 SWS, Language: German, Open in study portal

Practice (Ü)
On-Site

Organizational issues
Zugehörige Veranstaltung: [2560280] Einführung in die Wirtschaftspolitik

Literature

- Klump, Rainer (2013): Wirtschaftspolitik. Pearson Studium
- Baldwin, Richard und Charles Wyplosz (2019): The Economics of European Integration, 6. Edition, McGraw-Hill Education, London
- Foliensatz zur Vorlesung
- Übungsaufgaben

T 3.53 Course: Basics of German Company Tax Law and Tax Planning [T-WIWI-108711]

Responsible: Dr. Gerd Gutekunst
Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	2

Events					
WT 24/25	2560134	Basics of German Company Tax Law and Tax Planning	3 SWS	Lecture / 🗣	Wigger, Gutekunst
Exams					
WT 24/25	790unbe	Basics of German Company Tax Law and Tax Planning			Wigger
ST 2025	790unbe	Basics of German Company Tax Law and Tax Planning			Wigger

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

Assessment
Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1.5 h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

Prerequisites
None

Recommendations
Knowledge of the collection of public revenues is assumed. Therefore it is recommended to attend the course “Öffentliche Einnahmen” beforehand.

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

V Basics of German Company Tax Law and Tax Planning

2560134, WS 24/25, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

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

T 3.54 Course: Bayesian Statistics for Analyzing Data [T-WIWI-113471]

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	4,5 CP	graded	Each summer term	1 terms	1

Assessment
Alternative exam assessment (assignments and active participation). Details will be communicated at the first day of class.

Additional Information
Participation is limited to 10 participants. Registration is required for the course. If too many students register, students in higher semesters are selected first.

Workload
135 hours

T 3.55 Course: Behavioral Experiments in Action [T-WIWI-111393]

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	4,5 CP	graded	Each summer term	1 terms	1

Assessment
Gradings will be based on the quality of the experimental program, data, and the research report in Stage 2.

Prerequisites
Experimental design (either take the course in our module, or gain basic knowledge of experimental design by self-education)

Additional Information
In this course, students will gain first-hand experience into how to conduct an experimental study in the area of behavioral economics/psychology.

The course contains two stages. In Stage 1, students will learn how to plan, program, and run an experiment by attending to blocked lectures. In Stage 2, students will choose one classic experiment in the area of behavioral economics or psychology, conduct a replication of that experiment using the techniques acquired in Stage 1, and write a research report on the results of the replication.

The number of participants is limited. The registration will take place via the Wiwi-Portal.

Workload
135 hours

T 3.56 Course: Behavioral Lab Exercise [T-WIWI-111806]

Responsible: Prof. Dr. Petra Nieken
Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Irregular	1

Events					
WT 24/25	2500040	Behavioral Lab Exercise	4.5 SWS	Seminar / 🗣	Scheibehenne, Nieken
Exams					
WT 24/25	7900368	Behavioral Lab Exercise			Nieken, Scheibehenne

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

Assessment
Alternative exam assessment.

Recommendations
This class caters towards Master students who are interested in empirical research and in running lab experiments.

Additional Information
The course will be offered for the first time in the winter semester 21/22.

Due to the interactive nature of the class, the number of participants is limited. If you are interested, please contact the teachers directly via email.

Workload
135 hours

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

V Behavioral Lab Exercise

2500040, WS 24/25, 4.5 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
In this class, students learn the core principles of psychological and economic experiments. The course covers topics ranging from design principles, to best-practices, preregistration, and analysis of the experimental data. Students will actively participate in the course by covering one selected topic in a talk. All students will discuss the topics together with the professors to develop solid knowledge about experimental design and analysis plans. In a second step, all students will develop a draft of an experimental design and analysis plan for their own topic and present it to the class. The students will get detailed feedback enabling them to improve their drafts for future research.

T 3.57 Course: Behavioral Lab Exercise [T-WIWI-113095]

Responsible: Prof. Dr. Petra Nieken
Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	4,5 CP	graded	Irregular	1 terms	1

Events					
WT 24/25	2500040	Behavioral Lab Exercise	4.5 SWS	Seminar /	Scheibehenne, Nieken
Exams					
WT 24/25	7900368	Behavioral Lab Exercise			Nieken, Scheibehenne

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

Assessment
Alternative exam assessment (presentation during the semester). Details will be communicated at the first day of class.

Recommendations
This class caters towards Master students who are interested in empirical research and in running lab experiments.

Additional Information
Due to the interactive nature of the class, the number of participants is limited. If you are interested, please contact the teachers directly via email.
In this class, students learn the core principles of psychological and economic experiments. The course covers topics ranging from design principles, to best-practices, preregistration, and analysis of the experimental data. Students will actively participate in the course by covering one selected topic in a talk. All students will discuss the topics together with the professors to develop solid knowledge about experimental design and analysis plans. In a second step, all students will develop a draft of an experimental design and analysis plan for their own topic and present it to the class. The students will get detailed feedback, enabling them to improve their drafts for future research.

Workload
135 hours

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

V Behavioral Lab Exercise

2500040, WS 24/25, 4.5 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
In this class, students learn the core principles of psychological and economic experiments. The course covers topics ranging from design principles, to best-practices, preregistration, and analysis of the experimental data. Students will actively participate in the course by covering one selected topic in a talk. All students will discuss the topics together with the professors to develop solid knowledge about experimental design and analysis plans. In a second step, all students will develop a draft of an experimental design and analysis plan for their own topic and present it to the class. The students will get detailed feedback enabling them to improve their drafts for future research.

T 3.58 Course: Big Data Analytics [T-INFO-101305]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Oral examination	5 CP	graded	Each winter term	2

Events					
WT 24/25	24114	Data Science 1	3 SWS	Lecture / 🗣	Böhm, Kalinke
Exams					
WT 24/25	7500289	Data Science 1 & Data Science 2			Böhm, Schäfer, Nowack, Friederich
ST 2025	7500199	Data Science 1 & Data Science 2			Böhm

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

T 3.59 Course: BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I [T-MACH-100966]

Responsible: Prof. Dr. Andreas Guber
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each winter term	2

Events					
WT 24/25	2141864	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I	2 SWS	Lecture / 🗣	Guber, Ahrens
Exams					
WT 24/25	76-T-MACH-100966	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I			Guber
ST 2025	76-T-MACH-100966	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I			Guber

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

Assessment
written exam (75 Min.)

Prerequisites
none

Workload
120 hours

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

V BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I

Lecture (V) On-Site

2141864, WS 24/25, 2 SWS, Language: German, Open in study portal

Organizational issues
BioMEMS I-Klausur: Mo, 17.03.2025, 8:00 - 10:00; 10.11 Hertz-Hörsaal (ggf. auch 10.91 Redtenbacher-Hörsaal)
BioMEMS II-Klausur: Mo, 17.02.2025, 11:00 - 13:00; 10.11 Hertz-Hörsaal
BioMEMS III-Klausur: Do, 20.02.2025, 10:00 - 12:00; 10.11 Hertz-Hörsaal

Literature
Menz, W., Mohr, J., O. Paul: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 2005
M. Madou
Fundamentals of Microfabrication
Taylor & Francis Ltd.; Auflage: 3. Auflage. 2011

T 3.60 Course: BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II [T-MACH-100967]

Responsible: Prof. Dr. Andreas Guber
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	2

Events					
ST 2025	2142883	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II	2 SWS	Lecture / 🗣	Guber, Ahrens
Exams					
WT 24/25	76-T-MACH-100967	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II			Guber
ST 2025	76-T-MACH-100967	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II			Guber

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

Assessment
Written exam (75 Min.)

Prerequisites
none

Workload
120 hours

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

V BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II

Lecture (V) On-Site

2142883, SS 2025, 2 SWS, Language: German, Open in study portal

Content
Examples of use in Life-Sciences and biomedicine: Microfluidic Systems:
LabCD, Protein Cristallisation
Microarrys
Tissue Engineering
Cell Chip Systems
Drug Delivery Systems
Micro reaction technology
Microfluidic Cells for FTIR-Spectroscopy
Microsystem Technology for Anesthesia, Intensive Care and Infusion
Analysis Systems of Person´s Breath
Neurobionics and Neuroprosthesis
Nano Surgery

Organizational issues
Zu jedem Vorlesungstermin werden via ILIAS die jeweiligen Folien im PDF-Format zur Verfügung gestellt.

schriftl. Prüfung: Mo, 08.09.2025, 8 - 10 Uhr; 10.11 Hertz-Hörsaal

Literature
Menz, W., Mohr, J., O. Paul: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 2005

Buess, G.: Operationslehre in der endoskopischen Chirurgie, Band I und II;
Springer-Verlag, 1994

M. Madou
Fundamentals of Microfabrication

T 3.61 Course: BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III [T-MACH-100968]

Responsible: Prof. Dr. Andreas Guber
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	2

Events					
ST 2025	2142879	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III	2 SWS	Lecture / 🗣	Guber, Ahrens
Exams					
WT 24/25	76-T-MACH-100968	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III			Guber
ST 2025	76-T-MACH-100968	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III			Guber

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

Assessment
Written exam (75 Min.)

Prerequisites
none

Workload
120 hours

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

V BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III

Lecture (V) On-Site

2142879, SS 2025, 2 SWS, Language: German, Open in study portal

Content
Examples of use in minimally invasive therapy
Minimally invasive surgery (MIS)
Endoscopic neurosurgery
Interventional cardiology
NOTES
OP-robots and Endosystems
License of Medical Products and Quality Management

Organizational issues
Zu jedem Vorlesungstermin werden via ILIAS die jeweiligen Folien im PDF-Format zur Verfügung gestellt.

schriftl. Prüfung: Mo, 22.09.2025, 10:30 - 12:30 Uhr; 10.11 Hertz-Hörsaal

Literature
Menz, W., Mohr, J., O. Paul: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 2005

Buess, G.: Operationslehre in der endoskopischen Chirurgie, Band I und II;
Springer-Verlag, 1994

M. Madou
Fundamentals of Microfabrication

T 3.62 Course: Bond Markets [T-WIWI-110995]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2530560	Bond Markets	3 SWS	Lecture / Practice (/	Uhrig-Homburg, Molnar
Exams					
WT 24/25	7900311	Bond Markets			Uhrig-Homburg
ST 2025	7900280	Bond Markets			Uhrig-Homburg

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

Assessment
The assessment consists of a written exam (75min.)

A bonus can be earned by correctly solving at least 50% of the posed bonus exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one level (0.3 or 0.4). The examination is offered in each semester and can be repeated at any regular examination date.

Depending on further pandemic developments, the examination will be offered as an open-book examination (alternative exam assessment).

Additional Information
This course will be held in English.

Workload
135 hours

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

V Bond Markets

2530560, WS 24/25, 3 SWS, Language: English, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
The lecture "Bond Markets" deals with the national and international bond markets, which are an important source of financing for companies, as well as for the public sector. After an overview of the most important bond markets, different yield definitions are discussed. Based on this, the concept of the yield curve is presented. In addition, the theoretical and empirical relationships between ratings, default probabilities and spreads are analyzed. The focus will then be on questions regarding the valuation, measurement, management and control of credit risks.

The total workload for this course is approximately 135 hours (4.5 credits).

The assessment consists of a written exam (75min.) (according to §4(2), 1 SPO). A bonus can be earned by correctly solving at least 50% of the posed bonus exercices. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one level (0.3 or 0.4). The examination is offered in each semester and can be repeated at any regular examination date.

Students deepen their knowledge of national and international bond markets. They gain knowledge of the traded instruments and their key figures for describing default risk such as ratings, default probabilities or credit spreads.

Organizational issues
Die Veranstaltung wird freitags in der ersten Semesterhälfte am Campus B (Geb. 09.21) im Raum 124 angeboten. Die Klausur findet am 08.01.25 statt.

T 3.63 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each winter term	1

Events					
WT 24/25	2530565	Bond Markets - Models & Derivatives	2 SWS	Block / 🗣	Grauer, Uhrig-Homburg
Exams					
WT 24/25	7900318	Bond Markets - Models & Derivatives			Uhrig-Homburg

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

Assessment
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.

Recommendations
Knowledge of "Bond Markets" and "Derivatives" courses is very helpful.

Additional Information
This course will be held in English.

Workload
90 hours

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

V Bond Markets - Models & Derivatives

2530565, WS 24/25, 2 SWS, Language: English, Open in study portal

Block (B)
On-Site

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
Die Veranstaltung mit Seminarcharakter und dem Ziel, ein selbstgewähltes Themenfeld in Form einer schriftlichen Ausarbeitung eigenständig zu erarbeiten, findet in der 2. Semesterhälfte statt.

T 3.64 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	1,5 CP	graded	Each winter term	1

Events					
WT 24/25	2530562	Bond Markets - Tools & Applications	1 SWS	Block / 🗣	Uhrig-Homburg, Grauer
Exams					
WT 24/25	7900317	Bond Markets - Tools & Applications			Uhrig-Homburg
ST 2025	7900283	Bond Markets - Tools & Applications			Uhrig-Homburg

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

Assessment
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.

Recommendations
Knowledge of the "Bond Markets" course is very helpful.

Additional Information
This course will be held in English.

Workload
45 hours

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

V Bond Markets - Tools & Applications

2530562, WS 24/25, 1 SWS, Language: English, Open in study portal

Block (B)
On-Site

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
Die Veranstaltung findet in der ersten Semesterhälfte statt und beinhaltet eine eigenständige Projektarbeit im Umgang mit realen Bond Daten. Die Erfolgskontrolle erfolgt anhand einer schriftlichen Ausarbeitung und einer kurzen Präsentation.

T 3.65 Course: Brand Management [T-WIWI-112156]

Responsible: Prof. Dr. Ann-Kristin Kupfer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2572190	Brand Management	2 SWS	Lecture / 🗣	Kupfer
WT 24/25	2572191	Brand Management Exercise	1 SWS	Practice / 🗣	Kupfer
Exams					
WT 24/25	7900158	Brand Management			Kupfer
ST 2025	7900047	Brand Management			Kupfer

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

Assessment
The assessment of success will be done by the preparation and presentation of a case study as well as a written exam. Further details will be announced during the lecture.

Prerequisites
None

Recommendations
Students are highly encouraged to actively participate in class.

Workload
135 hours

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

V Brand Management

2572190, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Students learn the theoretical foundations of brand management and its most important concepts. They learn both about the importance of brands for consumers as well as the importance of brands for firms. Special emphasis will be given to the development of brand strategies. Furthermore, students will learn how to evaluate and apply brand instruments. A tutorial offers the opportunity to apply the key learnings of the lecture using case studies.

The learning objectives are as follows:

- Getting to know the theoretical foundations of brand management
- Evaluating strategic branding options (e.g., relating to the development of the core of the brand and the brand architecture) and operative brand instruments (e.g., relating to the brand name and logo)
- Fostering critical and analytical thinking skills and the application of knowledge to marketing problems
- Improving English skills

Total time required for 4.5 credit points: approx. 135 hours

Attendance time: 30 hours

Self-study: 105 hours

T 3.66 Course: Business Administration: Finance and Accounting [T-WIWI-102819]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each winter term	1

Exams			
WT 24/25	7900004	Business Administration: Finance and Accounting	Ruckes, Wouters
ST 2025	7900248	Business Administration: Finance and Accounting	Ruckes, Wouters

Assessment
The assessment consists of a written exam (90 min.) according to Section 4(2), 1 of the examination regulation.

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

Prerequisites
None

T 3.67 Course: Business Administration: Production Economics and Marketing [T-WIWI-102818]

Responsible: Prof. Dr. Wolf Fichtner
Prof. Dr. Martin Klarmann
Prof. Dr.-Ing. Thomas Lützkendorf
Prof. Dr. Martin Ruckes
Prof. Dr. Frank Schultmann

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	1

Exams			
WT 24/25	7900003	Business Administration: Production Economics and Marketing	Schultmann, Klarmann
ST 2025	7900040	Business Administration: Production Economics and Marketing	Klarmann, Schultmann

Assessment
The assessment consists of a written exam (90 minutes) according to Section 4(2), 1 of the examination regulation.

Prerequisites
None

T 3.68 Course: Business Administration: Strategic Management and Information Engineering and Management [T-WIWI-102817]

Responsible: Prof. Dr. Petra Nieken
Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	1

Exams			
WT 24/25	7900153	Business Administration: Strategic Management and Information Engineering and Management	Lindstädt, Weinhardt
ST 2025	7900182	Business Administration: Strategic Management and Information Engineering and Management	Lindstädt, Weinhardt

Assessment
The assessment consists of a written exam (90 min.) according to Section 4(2), 1 of the examination regulation.

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

Prerequisites
None

T 3.69 Course: Business Data Strategy [T-WIWI-106187]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2540484	Business Data Strategy	2 SWS	Lecture / 🗣	Weinhardt, Hariharan
WT 24/25	2540485	Übung zu Business Data Strategy	1 SWS	Practice / 🗣	Weinhardt, Schulz
Exams					
WT 24/25	7900234	Business Data Strategy			Weinhardt
ST 2025	7900267	Business data strategy			Weinhardt

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

Assessment
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulationand an alternative exam assessment according to § 4 paragraph 2 Nr. 3 of the examination regulation. The grade isdetermined by 2/3 through the written exam and by 1/3 through the alternative exam assessment (e.g., presentation).

Prerequisites
None

Recommendations
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.

Additional Information
Limited number of participants.

Workload
135 hours

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

V Business Data Strategy

2540484, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Lecture (V)
On-Site

Content
With new methods for capturing and using different types of data and industry's recognition that society's use of data is less than optimal, the need for comprehensive strategies is more important than ever before. Advances in cybersecurity and information sharing and the use of data in its raw form for decision making all add to the complexity of integrated processes, ownership, stewardship, and sharing. The life cycle of data in its entirety spans the infrastructure, system design, development, integration, and implementation of information-enabling solutions. This lecture focuses on teaching about these dynamics and tools to comprehend and manage them in organisation contexts. Given the increasing size and complexity of data, methods for the transformation and structured preparation are an important tool in the process of sense–making. Modern software solutions and programming languages provide frameworks for such tasks that form another part of this course ranging from conceptual systems modelling to data manipulation to automated generation of HTML reports and web-applications.

Organizational issues
Application/Registration

Attendance will be limited to 20-25 participants. Application/registration is therefore preliminary. After the application deadline has passed, positions will be allocated, based on evaluation of the previous study records. Applications are accepted only through the Wiwi-Portal: https://portal.wiwi.kit.edu/ys/8327

Anmeldung

Die Teilnehmeranzahl ist begrenzt (ca. 20-25 Plätze). Eine Anmeldung erfolgt deshalb zunächst unter Vorbehalt. Nach Ablauf der Anmeldefrist werden die Plätze zur Teilnahme, nach Einsicht der Vorleistungen im Studium vergeben. Die Anmeldung/ Bewerbung erfolgt ausschließlich über das Wiwi-Portal: https://portal.wiwi.kit.edu/ys/8327

T 3.70 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2540531	Business Dynamics	2 SWS	Lecture / 🗣	Geyer-Schulz, Glenn
WT 24/25	2540532	Exercise Business Dynamics	1 SWS	Practice / 🗣	Geyer-Schulz, Glenn
Exams					
WT 24/25	7979777	Business Dynamics (WS 2024/2025)			Geyer-Schulz
ST 2025	7900065	Business Dynamics (Nachklausur WS 2024/2025)			Geyer-Schulz

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

Assessment
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

Recommendations
None

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

V Business Dynamics

Lecture (V)
On-Site

2540531, WS 24/25, 2 SWS, Language: German, Open in study portal

Organizational issues
Termine und Raum für die VL + Ü Business Dynamics (2540532):

Sa (26.10.2024), 09:00 bis 19:00, Geb. 05.20, Raum 1C-01
Sa (23.11.2024), 09:00 bis 19:00, Geb. 05.20, Raum 1C-01
Sa (25.01.2025), 09:00 bis 19:00, Geb. 05.20, Raum 1C-01
Sa (15.02.2025), 09:00 bis 19:00, Geb. 05.20, Raum 1C-01

Literature
John D. Sterman. Business Dynamics: Systems Thinking and Modeling for a Complex World. McGraw-Hill, 2000.

T 3.71 Course: Business Innovation in Optics and Photonics [T-ETIT-104572]

Responsible: Prof. Dr. Werner Nahm
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	4 CP	graded	Each winter term	1

Events					
WT 24/25	2305742	Business Innovation in Optics and Photonics	2 SWS	Lecture / 🗣	Riedel, Nahm
WT 24/25	2305743	Erxercise for 2305742 Business Innovation in Optics and Photonics	1 SWS	Practice / 🗣	Riedel, Nahm
Exams					
WT 24/25	7305742	Business Innovation in Optics and Photonics			Nahm, Riedel

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

Assessment
Type of Examination: examination of another type

Duration of Examination: 4 group presentations à 20 minutes (approx.)

Modality of Exam: The exam consists of four group presentations. 2nd day: Technology Presentation. 3rd day: Development plan presentation. 4th day: Business Canvas presentation. Final presentation at Zeiss visit: Business pitch

Prerequisites
Good knowledge in optics & photonics.

T 3.72 Course: Business Intelligence Systems [T-WIWI-105777]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

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

Events					
WT 24/25	2540422	Business Intelligence Systems	3 SWS	Lecture /	Mädche
Exams					
WT 24/25	7900224	Business Intelligence Systems			Mädche
ST 2025	7900149	Business Intelligence Systems			Mädche

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

Assessment
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

Recommendations
Basic knowledge on database systems is helpful.

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

V Business Intelligence Systems

2540422, WS 24/25, 3 SWS, Language: English, Open in study portal

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

Content
In most modern enterprises, Business Intelligence & Analytics (BI&A) Systems represent a core enabler of decision-making in that they supply up-to-date and accurate information about all relevant aspects of a company's planning and operations: from stock levels to sales volumes, from process cycle times to key indicators of corporate performance. Modern BI&A systems leverage beyond reporting and dashboards also advanced analytical functions. Thus, today, they also play a major role in enabling data-driven products and services. This course aims to introduce theoretical foundations, concepts, tools, and current practice of BI&A Systems from a managerial and technical perspective.

The course is complemented by an engineering capstone project, where students work in a team with real-world use cases and data in order to create a prototypical Business intelligence & Analytics system using state-of-the-art technologies (e.g., scikit-learn in Python or Microsoft Power BI).

Learning objectives

- Understand the theoretical foundations of key Business Intelligence & Analytics concepts supporting decision-making
- Explore key capabilities of state-of-the-art Business Intelligence & Analytics Systems
- Learn how to successfully implement and run Business Intelligence & Analytics Systems from multiple perspectives, e.g. architecture, data management, consumption, analytics
- Get hands-on experience by working with Business Intelligence & Analytics Systems with real-world use cases and data

Prerequisites

This course is limited to 50 places. The capacity limitation is due to the format of the accompanying engineering capstone project. Strong analytical abilities and profound skills in SQL and Python are required. Students have to apply with their CVs and transcripts of records via the WiWi-Portal. The first lecture will present all organizational details and the underlying registration process for the lecture and the capstone project. The teaching language is English.

Die Erfolgskontrolle erfolgt in Form einer Prüfungsleistung anderer Art (Form) nach § 4 Abs. 2 Nr. 3 SPO. Die Leistungskontrolle erfolgt in Form einer einstündigen Klausur und durch Durchführung eines Capstone Projektes. Details zur Ausgestaltung der Erfolgskontrolle werden im Rahmen der Vorlesung bekannt gegeben.

Literature

- Turban, E., Aronson, J., Liang T.-P., Sharda, R. 2008. "Decision Support and Business Intelligence Systems".
- Watson, H. J. 2014. "Tutorial: Big Data Analytics: Concepts, Technologies, and Applications," Communications of the Association for Information Systems (34), p. 24.
- Arnott, D., and Pervan, G. 2014. "A critical analysis of decision support systems research revisited: The rise of design science," Journal of Information Technology (29:4), Nature Publishing Group, pp. 269–293 (doi: 10.1057/jit.2014.16) .
- Carlo, V. (2009). "Business intelligence: data mining and optimization for decision making". Editorial John Wiley and Sons, 308-317.
- Chen, H., Chiang, R. H. L, and Storey, V. C. 2012. „Business Intelligence and Analytics: From Big Data to Big Impact," MIS Quarterly (36:4), pp. 1165-1188.
- Davenport, T. 2014. Big Data @ Work, Boston, MA: Harvard Business Review.
- Economist Intelligence Unit. 2015 "Big data evolution: Forging new corporate capabilities for the long term"
- Power, D. J. 2008. "Decision Support Systems: A Historical Overview," Handbook on Decision Support Systems, pp. 121–140 (doi: 10.1007/978-3-540-48713-5_7) .
- Sharma, R., Mithras, S., and Kankanhalli, A. 2014. „Transforming decision-making processes: a research agenda for understanding the impact of business analytics on organisations," European Journal of Information Systems (23:4), pp. 433-441.
- Silver, M. S. 1991. "Decisional Guidance for Computer-Based Decision Support," MIS Quarterly (15:1), pp. 105-122.

Further literature will be made available in the lecture.

T 3.73 Course: Business Planning [T-WIWI-102865]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Irregular	1

Events					
WT 24/25	2500109	Business Planning for Founders - Startup CFO	2 SWS	Seminar / 🗣	Terzidis, Rosales Bravo
ST 2025	2545109	Business Planning for Founders - Startup CFO	2 SWS	Seminar / 🗣	Rosales Bravo, Terzidis
Exams					
WT 24/25	7900023	Business Planning for Founders			Terzidis
ST 2025	7900234	Business Planning for Founders			Terzidis

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

Assessment
Alternative exam assessment.

Prerequisites
None

Recommendations
None

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

V Business Planning for Founders - Startup CFO — **Seminar (S) On-Site**
2500109, WS 24/25, 2 SWS, Language: English, Open in study portal

Content
Content

Embark on a transformative journey into the dynamic realm of startup finance with our comprehensive course designed for Master's students interested in the task of aspiring to become future Chief Financial Officers (CFOs) or Chief Executive Officers (CEOs) in the startup. Particularly, students who previously attended classes on entrepreneurship or developed their business ideas in Design Thinking Seminars will work on the financial viability and, therefore, the potential for realizing their business ideas. The three-day seminar develops the financial literacy needed to start and operate an entrepreneurial venture, including analyzing and determining the cost and revenue structure of the firm and creating a financial strategy to execute the business plan successfully. Additionally, students will learn about the sources and conditions of different investment types and develop tailored fundraising strategies. The seminar is not restricted to the financial aspects but follows the Triple Bottom Line philosophy (3BL).

Throughout the course, real-world case studies and guest lectures, professional experts will provide valuable insights into the practical application of financial concepts.By the end of this course, you will be well-equipped to take on leadership roles in startups and startup ecosystems, armed with the managerial understanding required to drive success in dynamic and competitive markets.

Learning Objectives

Upon completion of this seminar, course participants will be able to

1. Analyze, forecast, and plan the cost structure and revenue streams of the venture project.
2. Reflect on the sustainability of a business based on the Triple Bottom Line theory.
3. Develop the essential financial statements for a startup.
4. Recall and reflect on investment strategies for startups.
5. Discover business stakeholders and prepare a tailored communication strategy.
6. Reflect on the role of information technology.
7. Apply negotiation techniques essential for securing favorable terms and agreements.
8. Have a brief overview of the related topic.

Credentials:

ONLY ONE of the two options - Business Planning for founders OR Business Planning for founders in the field of IT-Security - can be taken and credited under the in CAS mentioned partial credit, as they cover similar content. Registration must take place in the CAS for the respective examination.

Organizational issues
Registration is via the Wiwi-Portal.

In the seminar you will work on a project in teams of max. 5 persons. Team applications are welcome but not a prerequisite for participation. The seminars will be held in English.

V **Business Planning for Founders - Startup CFO** **Seminar (S)**
2545109, SS 2025, 2 SWS, Language: English, Open in study portal **On-Site**

Content
Content

Embark on a transformative journey into the dynamic realm of startup finance with our comprehensive course designed for Master's students interested in the task of aspiring to become future Chief Financial Officers (CFOs) or Chief Executive Officers (CEOs) in the startup. Particularly, students who previously attended classes on entrepreneurship or developed their business ideas in Design Thinking Seminars will work on the financial viability and, therefore, the potential for realizing their business ideas. The three-day seminar develops the financial literacy needed to start and operate an entrepreneurial venture, including analyzing and determining the cost and revenue structure of the firm and creating a financial strategy to execute the business plan successfully. Additionally, students will learn about the sources and conditions of different investment types and develop tailored fundraising strategies. The seminar is not restricted to the financial aspects but follows the Triple Bottom Line philosophy (3BL).

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Learning Objectives

Upon completion of this seminar, course participants will be able to

1. Analyze, forecast, and plan the cost structure and revenue streams of the venture project.
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4. Recall and reflect on investment strategies for startups.
5. Discover business stakeholders and prepare a tailored communication strategy.
6. Reflect on the role of information technology.
7. Apply negotiation techniques essential for securing favorable terms and agreements.
8. Have a brief overview of the related topic.

Credentials:

ONLY ONE of the two options - Business Planning for founders OR Business Planning for founders in the field of IT-Security - can be taken and credited under the in CAS mentioned partial credit, as they cover similar content. Registration must take place in the CAS for the respective examination.

Organizational issues
Wednesday, 07.05.2025, 09:00 -17:00
Wednesday, 28.05.2025, 09:00 - 17:00,
Final Session: tbd

ATTENTION: The last session with the team pitches will probably take place on Thursday, 03.07.2025, 09:00 – 13:00, as part of the Wissenswoche Innovation, open to the public

Registration is via the Wiwi-Portal.

In the seminar you will work on a project in teams of max. 5 persons. Team applications are welcome but not a prerequisite for participation. The seminars will be held in English.

T 3.74 Course: Business Process Modelling [T-WIWI-102697]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	2

Events					
WT 24/25	2511210	Business Process Modelling	2 SWS	Lecture / 🗣	Oberweis
WT 24/25	2511211	Exercise Business Process Modelling	1 SWS	Practice / 🗣	Oberweis, Schüler
Exams					
WT 24/25	79AIFB_MvG_C2	Business Process Modelling			Oberweis
ST 2025	79AIFB_MvG_B4	Business Process Modelling (Registration until 21.07.2025)			Oberweis

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

Assessment
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

Prerequisites
None

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

V Business Process Modelling

2511210, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The proper modeling of relevant aspects of business processes is essential for an efficient and effective design and implementation of processes. This lecture presents different classes of modeling languages and discusses the respective advantages and disadvantages of using actual application scenarios. For that simulative and analytical methods for process analysis are introduced. In the accompanying exercise the use of process modeling tools is practiced.

Learning objectives:

Students

- describe goals of business process modeling and aplly different modeling languages,
- choose the appropriate modeling language according to a given context,
- use suitable tools for modeling business processes,
- apply methods for analysing and assessing process modells to evaluate specific quality characteristics of the process model.

Recommendations:

Knowledge of course Applied Informatics I - Modelling is expected.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

Literature

- M. Weske: Business Process Management: Concepts, Languages, Architectures. Springer 2012.
- F. Schönthaler, G.Vossen, A. Oberweis, T. Karl: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer 2012.

Weitere Literatur wird in der Vorlesung bekannt gegeben.

T 3.75 Course: CAD-NX Training Course [T-MACH-102187]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework (practical)	2 CP	pass/fail	Each term	2

Events					
WT 24/25	2123357	CAD-NX training course	2 SWS	Practical course /	Rönnau, Mitarbeiter
Exams					
WT 24/25	76-T-MACH-102187	CAD-NX Training Course			Rönnau

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

Assessment
Practical verification as academic achievement by working on a design task on the CAD computer, duration: 60 min.

Prerequisites
None

Recommendations
Dealing with technical drawings is required.

Additional Information
For the practical course compulsory attendance exists.

Workload
60 hours

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

V CAD-NX training course

2123357, WS 24/25, 2 SWS, Language: German, Open in study portal

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

Content

- Overview of the functional range
- Introduction to the work environment of NX
- Basics of 3D-CAD modelling
- Feature-based modelling
- Freeform modelling
- Generation of technical drawings
- Assembly modelling
- Finite element method (FEM) and multi-body simulation (MBS) with NX

Students are able to:

- create their own 3D geometric models in the CAD system NX and generate drawings due to the created geometry
- carry out FE-studies and kinematic simulations using the integrated CAE tools
- use advanced, knowledge-based functionalities of NX to automate the creation of geometry and thus to ensure the reusability of the models.

Organizational issues
Das Praktikum kann entweder vorlesungsbegleitend oder als einwöchige Blockveranstaltung in der vorlesungsfreien Zeit absolviert werden. Weitere Informationen siehe ILIAS.

Literature
Praktikumsskript

T 3.76 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each winter term	1

Events					
WT 24/25	2545105	Case studies seminar: Innovation management	2 SWS	Seminar / 🗣	Weissenberger-Eibl
Exams					
WT 24/25	7900237	Case Studies Seminar: Innovation Management			Weissenberger-Eibl

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

Assessment
Alternative exam assessments (§4(2), 3 SPO).

The grade is made up of 50% of the grade for the written paper * and 50% of the grade for the presentation.

* Scope according to the current requirements for recognition in the seminar module

Prerequisites
None

Recommendations
Prior attendance of the course Innovation Management is recommended.

Workload
90 hours

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

V Case studies seminar: Innovation management

2545105, WS 24/25, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content
The objective of the seminar is to master selected concepts and methods of innovation management and then to apply these practically. Working in groups, the students apply the described concepts and methods of innovation management to a case study from the industry to answer specific questions. Accordingly, the block seminar involves a switch from input to the application of this input. At the end, the results of the group work are presented in the form of a seminar paper and discussed by the whole course. A short introduction to presentation techniques is planned to help students prepare the seminar papers.

Literature
Werden in der ersten Veranstaltung bekannt gegeben.

T 3.77 Course: CATIA CAD Training Course [T-MACH-102185]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework (practical)	2 CP	pass/fail	Each term	2

Events					
WT 24/25	2123358	CATIA CAD training course	2 SWS	Practical course /	Rönnau, Mitarbeiter
Exams					
WT 24/25	76-T-MACH-102185	CATIA CAD Training Course			Rönnau

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

Assessment
Practical examination on CAD computer, duration: 60 min.

Prerequisites
None

Recommendations
Dealing with technical drawings is required.

Additional Information
For the practical course attendance is compulsory.

Workload
60 hours

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

V CATIA CAD training course

2123358, WS 24/25, 2 SWS, Language: German, Open in study portal

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

Content

- Basics of CATIA such as user interface, handling etc.
- Production and processing of different model types
- Production of basic geometries and parts
- Generation of detailed drawings
- Integration of partial solutions in modules
- Working with constrains
- Strength analysis with FEM
- Kinematic simulation with DMU
- Dealing with CATIA Knowledgeware

Students are able to:

- create their own 3D geometric models in the CAD system CATIA and generate drawings due to the created geometry
- carry out FE-studies and kinematic simulations using the integrated CAE tools
- use advanced, knowledge-based functionalities of CATIA to automate the creation of geometry and thus to ensure the reusability of the models.

Organizational issues
Das Praktikum kann vorlesungsbegleitend absolviert werden oder als einwöchige Blockveranstaltung in der vorlesungsfreien Zeit. Weitere Informationen siehe ILIAS.

Literature
Praktikumskript

T 3.78 Course: Ceramic Processing Technology [T-MACH-102182]

Responsible: Dr. Joachim Binder
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Assessment
The assessment consists of an oral exam (approx. 20 min) taking place at the agreed date.

Auxiliary means: none

The re-examination is offered upon agreement.

Prerequisites
none

T 3.79 Course: Challenges in Supply Chain Management [T-WIWI-102872]

Responsible: Esther Mohr
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

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

Events					
ST 2025	2550494	Service Operations and Cyber Security	3 SWS	Lecture /	Mohr

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

Assessment
The assessment consists of a written paper and an oral exam of ca. 30-40 min.

Prerequisites
None

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

Additional Information
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 Service Operations and Cyber Security

2550494, SS 2025, 3 SWS, Language: German, Open in study portal

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

Content
As part of the event, case studies on future challenges in Service Operations and Cyber Security will be addressed at the BSI (Federal Office for Information Security). The event aims to present, critically assess, and discuss current issues in Service Operations and Cyber Security.

The focus is not only on current trends but primarily on future challenges, particularly regarding their applicability in practical applications. The main part of the event consists of working on project-related case studies from the BSI in Bonn. Students are expected to scientifically address a practical issue: by delving into a scientific subtopic, students will become familiar with scientific literature while also learning critical argumentation techniques essential for practical applications. Furthermore, emphasis will be placed on a critical discussion of the approaches.

The content of the event covers forward-looking topics in Service Operations and Cyber Security. The exact topics will be announced at the beginning of each semester during an introductory meeting.

Organizational issues
Bewerbung über das Wiwi-Portal möglich:

https://go.wiwi.kit.edu/OR_CyberSecurity

(Bewerbungszeitraum: 01.03.2025 - 13.04.2025)

Literature
Wird in Abhängigkeit vom Thema in den Projektteams bekanntgegeben.

T 3.80 Course: Characteristics of Transportation Systems [T-BGU-106609]

Responsible: Prof. Dr.-Ing. Peter Vortisch
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	3 CP	graded	Each term	1 terms	2

Events					
ST 2025	6232806	Properties of Means of Transport	2 SWS	Lecture / 🗣	Vortisch
Exams					
WT 24/25	8240106609	Characteristics of Transportation Systems			Vortisch
ST 2025	8240106609	Characteristics of Transportation Systems			Vortisch

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

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.81 Course: Circular Economy – Challenges and Potentials [T-WIWI-114057]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each summer term	1

Events					
ST 2025	2581965	Circular Economy - Challenges and Potentials	2 SWS	Lecture / 🗣	Schultmann
Exams					
ST 2025	7981965	Circular Economy – Challenges and Potentials			Schultmann

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

Assessment
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.

Workload
105 hours

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

V Circular Economy - Challenges and Potentials

2581965, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Circular Economy (CE) is an economic system that on the one hand aims to minimize waste, emissions and resource consumption and on the other hand increase resource efficiency by keeping products and materials in use for as long as possible. Based on basic ideas and principles of CE this lecture tackles potentials and challenges for the design and operations of circular value chains and systems. Different research-orientied case studies reveal and illustrate the potential implementation as well as the limits and future needs of CE as a key element of sustainable industrial development.

Literature
Wird in der Lehrveranstaltung bekannt gegeben.

T 3.82 Course: Civil Law for Beginners [T-INFO-103339]

Responsible: Dr. Yvonne Matz
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each winter term	3

Events					
WT 24/25	2424012	Civil Law for Beginners	4 SWS	Lecture / 🗣	Matz
Exams					
WT 24/25	7500012	Civil Law for Beginners			Matz
ST 2025	7500041	Civil Law for Beginners			Matz

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

T 3.83 Course: Climatology [T-PHYS-101092]

Responsible: Prof. Dr. Joaquim José Ginete Werner Pinto
Organisation: KIT Department of Physics
Part of: M-WIWI-104904 - Natural Sciences

Type	Credits	Grading	Recurrence	Version
Coursework	4 CP	pass/fail	Each summer term	4

Events					
ST 2025	4051111	Klimatologie	3 SWS	Lecture / 🗣	Ginete Werner Pinto
ST 2025	4051112	Übungen zu Klimatologie	1 SWS	Practice / 🗣	Ginete Werner Pinto, Ludwig, Christ, Dillerup
Exams					
ST 2025	7800005	Climatology			Ginete Werner Pinto

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

Prerequisites
none

Workload
120 hours

T 3.84 Course: Cognitive Modeling [T-WIWI-111392]

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	4,5 CP	graded	Each winter term	1 terms	1

Assessment
There will be 4 assignments during the course of the semester. Each will count 25% towards the final grade.

Prerequisites
Calculus, probability theory

Additional Information
The goal of this course is to help students develop a basic understanding of computational models in the study of human cognition and behavior.

In the first half of the semester, we will go over the following contents to prepare for the learning of cognitive modeling: basics of the R software, foundations of probability, and parameter estimation. In the second half, we will discuss the general ideas of modeling in behavioral science as well as some specific cognitive models. The class will take a biweekly lecture form. All lectures, materials, and assignments are in English.

The number of participants is limited. The registration will take place via the Wiwi-Portal.

Workload
135 hours

T 3.85 Course: Collective Intelligence in Human Judgment and Decision Making [T-WIWI-114186]

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	4,5 CP	graded	Each summer term	1 terms	1

Events					
ST 2025	2500026	Collective Intelligence in Human Judgment and Decision Making	2 SWS	Lecture / 🗣	Gradwohl

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

Assessment
Alternative exam assessment. Details will be discussed at the beginning of the course.

Recommendations
Willingness to engage with experimental research papers and basic mathematical models is required.

Additional Information
This course covers the key ideas of collective intelligence, asking when it emerges and when it fails. Students will engage with classical and contemporary research papers about how we can combine information from different individuals. They learn to understand and discuss under which conditions combining judgments and decisions of multiple individuals produces collective intelligence and when it creates the risk to run into collective madness and herding.

After the course students can define and describe important concepts of collective intelligence and can name and describe experimental paradigms that are used to investigate it. They will practice their ability to read and understand research papers and to critically evaluate the claims in empirical and theoretical research papers.

Moreover, they can apply the concepts and ideas of collective intelligence to examples related to consumer behavior, management and their everyday lives. All lectures, materials, and assignments will be in English.

The number of participants is limited. The registration will take place via the Campus portal.

Workload
135 hours

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

V Collective Intelligence in Human Judgment and Decision Making

2500026, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
This course covers the key ideas of collective intelligence, asking when it emerges and when it fails. Students will engage with classical and contemporary research papers about how we can combine information from different individuals. They learn to understand and discuss under which conditions combining judgments and decisions of multiple individuals produces collective intelligence and when it creates the risk to run into collective madness and herding.

After the course students can define and describe important concepts of collective intelligence and can name and describe experimental paradigms that are used to investigate it. They will practice their ability to read and understand research papers and to critically evaluate the claims in empirical and theoretical research papers. Moreover, they can apply the concepts and ideas of collective intelligence to examples related to consumer behavior, management and their everyday lives.

All lectures, materials, and assignments are in English. The number of participants is limited. The registration will take place via the Campus portal.

Grades will be determined based on different parts, including active participation and written assignments. Details will be discussed at the beginning of the course.

Organizational issues
Participation is limited to 20 participants. Registration via the campus portal is required for the course. If too many students register, students in higher semesters are selected first.

T 3.86 Course: Collective Perception in Autonomous Driving [T-WIWI-113363]

Responsible: Prof. Dr. Alexey Vinel
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2511456	Collective Perception in Autonomous Driving	2 SWS	Lecture /	Bied, Zhao , Vinel
ST 2025	2511457	Exercise Collective Perception in Autonomous Driving	1 SWS	Practice /	Flores Comeca, Arockiasamy, Zhao , Bied
Exams					
WT 24/25	79AIFB_CPAD_B3	Collective Perception in Autonomous Driving			Vinel
ST 2025	79AIFB_CPAD_C3	Collective Perception in Autonomous Driving (Registration until 21.07.2025)			Vinel

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

Assessment
The default assessment of this course is a written examination (60 min).

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

Prerequisites
None.

Workload
135 hours

T 3.87 Course: Combustion Engines I [T-MACH-102194]

Responsible: Prof. Dr. Thomas Koch
Dr.-Ing. Heiko Kubach

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2133113	CO2-neutral combustion engines and their fuels I	3 SWS	Lecture / Practice (/ 🗣	Koch
Exams					
WT 24/25	76-T-MACH-102194	CO2-neutral combustion engines and their fuels I			Kubach, Koch
ST 2025	76-T-MACH-102194	CO2-neutral combustion engines and their fuels I			Koch

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

Assessment
oral examination, Duration: 25 min., no auxiliary means

Prerequisites
none

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

V CO2-neutral combustion engines and their fuels I

2133113, WS 24/25, 3 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
Introduction, Presentation of IFKM
Working Principle
Characteristic Parameters
Engine Parts
Drive Train
Fuels
Gasoline Engines
Diesel Engines
Hydrogen Engines
Exhaust Gas Emissions

Organizational issues
Übungstermine Donnerstags nach Bekanntgabe in der Vorlesung

T 3.88 Course: Combustion Engines II [T-MACH-104609]

Responsible: Dr.-Ing. Rainer Koch
Dr.-Ing. Heiko Kubach

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	5 CP	graded	Each summer term	1

Events					
ST 2025	2134151	CO2-neutral combustion engines and their fuels II	3 SWS	Lecture / Practice (/ 🗣	Koch
Exams					
WT 24/25	76-T-MACH-104609	Combustion Engines, Hydrogen Engines and CO2 neutral Fuels II			Kubach, Koch
ST 2025	76-T-MACH-104609	Combustion Engines, Hydrogen Engines and CO2 neutral Fuels II			Koch

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

Assessment
oral examination, duration: 25 minutes, no auxiliary means

Prerequisites
none

Recommendations
Fundamentals of Combustion Engines I helpful

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

V CO2-neutral combustion engines and their fuels II

2134151, SS 2025, 3 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

T 3.89 Course: Communication Systems and Protocols [T-ETIT-101938]

Responsible: Dr.-Ing. Jens Becker
Prof. Dr.-Ing. Jürgen Becker

Organisation: KIT Department of Electrical Engineering and Information Technology

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each summer term	1

Events					
ST 2025	2311616	Communication Systems and Protocols	2 SWS	Lecture / 🗣	Becker, Becker
ST 2025	2311618	Tutorial for 2311616 Communication Systems and Protocols	1 SWS	Practice / 🗣	Stammler
Exams					
WT 24/25	7311616	Communication Systems and Protocols			Becker, Becker
ST 2025	7311616	Communication Systems and Protocols			Becker, Becker

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

Prerequisites
none

T 3.90 Course: Competition in Networks [T-WIWI-100005]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	3

Events					
WT 24/25	2561204	Competition in Networks	2 SWS	Lecture /	Mitusch
WT 24/25	2561205	Übung zu Wettbewerb in Netzen	1 SWS	Practice /	Mitusch, Corbo
Exams					
WT 24/25	7900221	Competition in Networks			Mitusch
ST 2025	7900274	Competition in Networks			Mitusch

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

Assessment
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.

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

Workload
135 hours

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

V Competition in Networks

2561204, WS 24/25, 2 SWS, Language: German, Open in study portal

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

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

Literature
Literatur und Skripte werden in der Veranstaltung angegeben.

T 3.91 Course: Computational Economics [T-WIWI-102680]

Responsible: Prof. Dr. Pradyumn Kumar Shukla
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	3

Events					
WT 24/25	2590458	Computational Economics	2 SWS	Lecture / 🏵	Shukla
WT 24/25	2590459	Excercises to Computational Economics	1 SWS	Practice / 🏵	Shukla
Exams					
WT 24/25	79AIFB_CE_B1	Computational Economics			Shukla
ST 2025	79AIFB_CE_C6	Computational Economics (Registration until 21.07.2025)			Shukla

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

Assessment
Success is assessed in the form of a written (60 min) or oral examination.

The examination for this course is offered both in the semester in which the course takes place and in the following semester. In the following semester (summer term), participation in the exam is **exclusively reserved for students who did not pass the first attempt.** This regulation applies from winter semester 2025/2026.

Prerequisites
None

Workload
135 hours

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

V Computational Economics

2590458, WS 24/25, 2 SWS, Language: English, Open in study portal

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

Content
Examining complex economic problems with classic analytical methods usually requires making numerous simplifying assumptions, for example that agents behave rationally or homogeneously. Recently, widespread availability of computing power gave rise to a new field in economic research that allows the modeling of heterogeneity and forms of bounded rationality: Computational Economics. Within this new discipline, computer based simulation models are used for analyzing complex economic systems. In short, an artificial world is created which captures all relevant aspects of the problem under consideration. Given all exogenous and endogenous factors, the modelled economy evolves over time and different scenarios can be analyzed. Thus, the model can serve as a virtual testbed for hypothesis verification and falsification.

Learning objectives:

The student

- understands the methods of Computational Economics and applies them on practical issues,
- evaluates agent models considering bounded rational behaviour and learning algorithms,
- analyses agent models based on mathematical basics,
- knows the benefits and disadvantages of the different models and how to use them,
- examines and argues the results of a simulation with adequate statistical methods,
- is able to support the chosen solutions with arguments and can explain them.

Literature

- R. Axelrod: "Advancing the art of simulation in social sciences". R. Conte u.a., Simulating Social Phenomena, Springer, S. 21-40, 1997.
- R. Axtel: "Why agents? On the varied motivations for agent computing in the social sciences". CSED Working Paper No. 17, The Brookings Institution, 2000.
- K. Judd: "Numerical Methods in Economics". MIT Press, 1998, Kapitel 6-7.
- A. M. Law and W. D. Kelton: "Simulation Modeling and Analysis", McGraw-Hill, 2000.
- R. Sargent: "Simulation model verification and validation". Winter Simulation Conference, 1991.
- L. Tesfation: "Notes on Learning", Technical Report, 2004.
- L. Tesfatsion: "Agent-based computational economics". ISU Technical Report, 2003.

Weiterführende Literatur:

- Amman, H., Kendrick, D., Rust, J.: "Handbook of Computational Economics". Volume 1, Elsevier North-Holland, 1996.
- Tesfatsion, L., Judd, K.L.: "Handbook of Computational Economics". Volume 2: Agent-Based Computational Economics, Elsevier North-Holland, 2006.
- Marimon, R., Scott, A.: "Computational Methods for the Study of Dynamic Economies". Oxford University Press, 1999.
- Gilbert, N., Troitzsch, K.: "Simulation for the Social Scientist". Open University Press, 1999.

T 3.92 Course: Computational FinTech with Python and C++ [T-WIWI-106496]

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	1,5 CP	graded	Each summer term	1

Assessment
The grade is based on a larger or several smaller programming exercises.

Prerequisites
There are two conditions for taking this course:

1. This course is only open for registered students of the module “Disruptive FinTech Innovations”.
2. Registered students do also attend in the same semester the lecture “Engineering FinTech Solutions” and the seminar “Automated Financial Advisory”.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-WIWI-106193 - Engineering FinTech Solutions must have been started.

Workload
45 hours

T 3.93 Course: Computational Modelling of Judgments, Decisions and Cognition [T-WIWI-114185]

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	4,5 CP	graded	Each summer term	1 terms	1

Events					
ST 2025	2500119	Computational Modelling of Judgments, Decisions and Cognition	2 SWS	Others (sons / 🗣	Gradwohl

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

Assessment
Alternative exam assessment. There will be 4 assignments during the course of the semester. Each assignment will count 25% towards the final grade.

Recommendations
Basic programming skills (first experience with R or Python is advantageous), willingness to engage with maths and mathematical notation, calculus, and probability theory are required.

Additional Information
This course enables students to develop a basic understanding of computational models in the study of human judgment, decision making and cognition. After this course students can describe why we use computational models of cognition and behavior, they will be able to list prominent models and some of their criticisms and weaknesses. Moreover, they will be capable of programming and understanding simple and more advanced computational models in mathematical notation and code.
After covering the main ideas of using computational models and preparing technical prerequisites, we will learn how to interpret models with tools like simulations and how to fit models to data.
All lectures, materials, and assignments are in English. The number of participants is limited. The registration will take place via the Campus portal.

Workload
135 hours

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

V Computational Modelling of Judgments, Decisions and Cognition

2500119, SS 2025, 2 SWS, Language: English, Open in study portal

Others (sonst.)
On-Site

Content
This course enables students to develop a basic understanding of computational models in the study of human judgment, decision making and cognition. After this course students can describe why we use computational models of cognition and behavior, they will be able to list prominent models and some of their criticisms and weaknesses. Moreover, they will be capable of programming and understanding simple and more advanced computational models in mathematical notation and code.

After covering the main ideas of using computational models and preparing technical prerequisites, we will learn how to interpret models with tools like simulations and how to fit models to data.

All lectures, materials, and assignments are in English. The number of participants is limited. The registration will take place via the Campus portal.

Organizational issues
Participation is limited to 15 participants. Registration via the campus portal is required for the course. If too many students register, students in higher semesters are selected first.

T 3.94 Course: Computer Aided Data Analysis [T-GEISTSOZ-104565]

Responsible: Prof. Dr. Gerd Nollmann
Organisation: KIT Department of Humanities and Social Sciences
Part of: M-WIWI-104906 - Social Sciences

Type	Credits	Grading	Version
Coursework	0 CP	pass/fail	1

Events					
WT 24/25	5000058	Decompositions and regression methods	2 SWS	Course (/	Nollmann
WT 24/25	5000059	The gender wage gap	2 SWS	Course (/	Nollmann
ST 2025	5011018	Computational Social Science: Topics and positions in the German Parliament (Part 2)	2 SWS	Seminar /	Banisch
Exams					
WT 24/25	7400278	Computer Aided Data Analysis			Nollmann, Teutsch
WT 24/25	7400353	Computer Aided Data Analysis			Nollmann
ST 2025	7400369	Computer Aided Data Analysis			Nollmann

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

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

V Computational Social Science: Topics and positions in the German Parliament (Part 2)

Seminar (S)
Blended (On-Site/Online)

5011018, SS 2025, 2 SWS, Language: German, Open in study portal

Content
The course consists of two parts (5011018 and 5011002) that are ideally taken in parallel.

Organizational issues
The course consists of two parts (5011018 and 5011002) that are ideally taken in parallel.

See Ilias-course: 5011002 – Computational Social Science: Themen und Positionen im Deutschen Bundestag (Teil 1)

T 3.95 Course: Computer Contract Law [T-INFO-102036]

Responsible: Michael Menk
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	2

Events					
WT 24/25	2411604	Computer Contract Law	2 SWS	Lecture / 🗣	Menk
Exams					
WT 24/25	7500065	Computer Contract Law			Sattler, Matz
ST 2025	7500066	Computer Contract Law			Sattler

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

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-INFO-101316 - Law of Contracts must not have been started.

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

V Computer Contract Law

2411604, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The course deals with contracts from the following areas:

- Contracts of programming, licencing and maintaining software
- Contracts in the field of IT employment law
- IT projects and IT Outsourcing
- Internet Contracts

From these areas single contracts will be chosen and discussed (e.g. software maintenance, employment contract with a software engineer). Concerning the respective contract the technical features, the economic background and the subsumption in the national law of obligation (BGB-Schuldrecht) will be discussed. As a result different contractual clauses will be developed by the students. Afterwards typical contracts and conditions will be analysed with regard to their legitimacy as standard business terms (AGB). It is the aim to show the effects of the german law of standard business terms (AGB-Recht) and to point out that contracts are a means of drafting business concepts and market appearance.

It is the aim of this course to provide students with knowledge in the area of contract formation and formulation in practice that builds upon the knowledge the students have already acquired concerning the legal protection of computer programs. Students shall understand how the legal rules depend upon, and interact with, the economic background and the technical features of the subject. The contract drafts shall be prepared by the students and will be corporately completed during the lecture. It is the aim of the course that students will be able to formulate contracts by themselves.

Literature

- Langenfeld, Gerrit Vertragsgestaltung Verlag C.H.Beck, III. Aufl. 2004
- Heussen, Benno Handbuch Vertragsverhandlung und Vertragsmanagement Verlag C.H.Beck, II. Aufl. 2002
- Schneider, Jochen Handbuch des EDV-Rechts Verlag Dr. Otto Schmidt KG, III. Aufl. 2002

Weiterführende Literatur

Ergänzende Literatur wird in den Vorlesungsfolien angegeben.

T 3.96 Course: Computer Organization [T-INFO-103531]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Version
Written examination	6 CP	graded	1

Events					
WT 24/25	2424502	Computer Organization	3 SWS	Lecture	Henkel, Lehmann
WT 24/25	2424505	Übungen zu Rechnerorganisation	2 SWS	Practice	Lehmann
Exams					
WT 24/25	7500228	Computer Organization			Henkel
ST 2025	7500240	Computer Organization			Henkel

T 3.97 Course: Constitution and Properties of Protective Coatings [T-MACH-105150]

Responsible: Prof. Sven Ulrich
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2177601	Constitution and Properties of Protective Coatings	2 SWS	Lecture / 🗣	Ulrich
Exams					
WT 24/25	76-T-MACH-105150	Constitution and Properties of Protective Coatings			Ulrich
ST 2025	76-T-MACH-105150	Constitution and Properties of Protective Coatings			Ulrich

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

Assessment
oral examination (about 30 min)

no tools or reference materials

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

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

V Constitution and Properties of Protective Coatings

2177601, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
oral examination (about 30 min); no tools or reference materials

Teaching Content:

introduction and overview

concepts of surface modification

coating concepts

coating materials

methods of surface modification

coating methods

characterization methods

state of the art of industrial coating of tools and components

new developments of coating technology

regular attendance: 22 hours
self-study: 98 hours

Transfer of the basic knowledge of surface engineering, of the relations between constitution, properties and performance, of the manifold methods of modification, coating and characterization of surfaces.

Recommendations: none

Organizational issues
Falls die Vorlesung online stattfinden muss, bitte um Anmeldung unter sven.ulrich@kit.edu bis zum 22.10.24.

Den entsprechenden MS Teams Link erhalten Sie dann per E-Mail am 23.10.24.

Literature
Bach, F.-W.: Modern Surface Technology, Wiley-VCH, Weinheim, 2006

Abbildungen und Tabellen werden verteilt; Copies with figures and tables will be distributed

T 3.98 Course: Constitution and Properties of Wearresistant Materials [T-MACH-102141]

Responsible: Prof. Sven Ulrich
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	3

Events					
ST 2025	2194643	Constitution and Properties of Wear resistant materials	2 SWS	Lecture / 🗣	Ulrich
Exams					
WT 24/25	76-T-MACH-102141	Constitution and Properties of Wearresistant Materials			Ulrich
ST 2025	76-T-MACH-102141	Constitution and Properties of Wearresistant Materials			Ulrich

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

Assessment
oral examination (about 30 min)

no tools or reference materials

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

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

V Constitution and Properties of Wear resistant materials

2194643, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The assessment consists of an oral exam (ca. 30 min) taking place at the agreed date (according to Section 4(2), 2 of the examination regulation). The re-examination is offered upon agreement.

Teaching Content:

introduction

materials and wear

unalloyed and alloyed tool steels

high speed steels

stellites and hard alloys

hard materials

hard metals

ceramic tool materials

superhard materials

new developments

regular attendance: 22 hours
self-study: 98 hours

Basic understanding of constitution of wear-resistant materials, of the relations between constitution, properties and performance, of principles of increasing of hardness and toughness of materials as well as of the characteristics of the various groups of wear-resistant materials.

Recommendations: none

Organizational issues
Die Blockveranstaltung findet in folgendem Zeitraum statt:

11.06.-13.06.2025: jeweils von 8:00-17:15 Uhr;

Ort: KIT-CN, Geb. 681, Raum 214

Anmeldung verbindlich bis zum 04.06.2025 unter sven.ulrich@kit.edu.

Nach der Anmeldung wird Ihnen im Falle einer Online-Veranstaltung der Link zur Vorlesung per E-Mail am 10.06.2025 mitgeteilt.

Literature
Laska, R. Felsch, C.: Werkstoffkunde für Ingenieure, Vieweg Verlag, Braunschweig, 1981

Schedler, W.: Hartmetall für den Praktiker, VDI-Verlage, Düsseldorf, 1988

Schneider, J.: Schneidkeramik, Verlag moderne Industrie, Landsberg am Lech, 1995

Kopien der Abbildungen und Tabellen werden verteilt; Copies with figures and tables will be distributed

T 3.99 Course: Construction Equipment [T-BGU-101845]

Responsible: Prof. Dr.-Ing. Sascha Gentes
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	3 CP	graded	Each term	1 terms	1

Events					
WT 24/25	6243701	Construction Equipment	2 SWS	Lecture / 🗣	Gentes, Dörfler, Schneider
Exams					
WT 24/25	8240101845	Construction Equipment			Gentes, Schneider
ST 2025	8240101845	Construction Equipment			Gentes

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

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.100 Course: Construction Technology [T-BGU-101691]

Responsible: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	6 CP	graded	Each term	1 terms	1

Events					
ST 2025	6200410	Construction Technology	3 SWS	Lecture / 🗣	Gentes, Haghsheno, Schneider
ST 2025	6200411	Exercises to Construction Technology	1 SWS	Practice / 🗣	Gentes, Haghsheno, Schneider, Waleczko
Exams					
WT 24/25	8230101691	Construction Technology			Haghsheno, Gentes, Schneider
ST 2025	8230101691	Construction Technology			Haghsheno

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

Assessment
written exam with 90 minutes

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
180 hours

T 3.101 Course: Consumer Psychology [T-WIWI-114292]

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2572174	Consumer Psychology	3 SWS	Lecture	Scheibehenne
ST 2025	2572176	Übung zu Consumer Psychology	1 SWS	Practice / 🗣	Scheibehenne, Vadakkedath Dharmapalan
Exams					
ST 2025	7900009	Consumer Psychology			Scheibehenne
ST 2025	7900374	Consumer Behavior			Scheibehenne

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

Assessment
The assessment of success takes the form of a presentation (weighting 30%) as part of the exercise, evaluations of weekly assignments throughout the semester (30%) and a written examination (90 minutes, weighting 40%). The details of the assessment will be announced at the beginning of the course.

Prerequisites
None.

Additional Information
Important information

Due to the interactive nature of the class, it is important to regularly participate in the weekly meetings and to regularly submit written assignments in preparation of these meetings. The assignments and active participation is part of the final grade. The 'Übung' associated with this course is mandatory: Students will be asked to do presentations in groups (introduce and discuss academic papers assigned by the lecturer). This will take place over one day (as a blocked event) during the semester (When and where will be announced at the beginning of the semester). The presentation also counts towards the final grade. There will be no weekly or bi-weekly Übung besides this event.

Goal

The goal of the class is to gain a better understanding of the psychological factors that influence consumer behavior. This includes situational, biological, cognitive, social, and evolutionary factors. We will address these questions from an interdisciplinary perspective. While the main focus is on theories from psychology, we will also incorporate relevant research from Marketing, Cognitive Science, Biology, and Economics.

Description

Just like Physics is an important foundation for Engineering, Psychology is an important basis for Economics, Management, and Marketing. Hence, getting a better understanding of the 'human condition' provides deeper insights into economic theory. This is particularly true for consumer behavior. Consumer decisions are ubiquitous in daily life, and they can have long-ranging and important consequences for individual (financial) well-being and health but also for societies and the planet as a whole. We will explore how consumer behavior is shaped by social influences, situational and cognitive constraints, as well as by emotions, motivations, evolutionary forces, neuronal processes, and individual differences. Across all topics covered in class, we will engage with basic theoretical work as well as with groundbreaking empirical research and current scientific debates. The class will be taught in English.

Grading

Grading is based on three pillars: Active participation during the semester (homework assignments, in-class participation, 30%), your presentation in the Übung (30%) and a written exam at the end of the semester (40%). The grading of the homework will be based on two randomly selected weeks throughout the semester. The exam will cover the content of the class. The exam questions will be in English. You are allowed to bring a language dictionary into the exam, but you are not allowed to bring notes. Details about the content and the format of the exam will be announced in the lecture. All part-grades and the final grade will be communicated by the end of the semester.

Workload

The total workload for this course is approximately 135 hours:

Presence time: 30 hours

Preparation and wrap-up of the course: 45 hours

Exam and exam preparation: 60 hours

For further information, please contact the research group Cognition and Consumer Behavior (http://cub.iism.kit.edu/).

Workload
135 hours

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

V **Consumer Psychology** **Lecture (V)**
2572174, SS 2025, 3 SWS, Language: English, Open in study portal

Content
Important information

Due to the interactive nature of the class, it is important to regularly participate in the weekly meetings and to regularly submit written assignments in preparation of these meetings. The assignments and active participation is part of the final grade. The 'Übung' associated with this course is mandatory: Students will be asked to do presentations in groups (introduce and discuss academic papers assigned by the lecturer). This will take place over one day (as a blocked event) during the semester (When and where will be announced at the beginning of the semester). The presentation also counts towards the final grade. There will be no weekly or bi-weekly Übung besides this event.

Goal

The goal of the class is to gain a better understanding of the psychological factors that influence consumer behavior. This includes situational, biological, cognitive, social, and evolutionary factors. We will address these questions from an interdisciplinary perspective. While the main focus is on theories from psychology, we will also incorporate relevant research from Marketing, Cognitive Science, Biology, and Economics.

Description

Just like Physics is an important foundation for Engineering, Psychology is an important basis for Economics, Management, and Marketing. Hence, getting a better understanding of the 'human condition' provides deeper insights into economic theory. This is particularly true for consumer behavior. Consumer decisions are ubiquitous in daily life, and they can have long-ranging and important consequences for individual (financial) well-being and health but also for societies and the planet as a whole. We will explore how consumer behavior is shaped by social influences, situational and cognitive constraints, as well as by emotions, motivations, evolutionary forces, neuronal processes, and individual differences. Across all topics covered in class, we will engage with basic theoretical work as well as with groundbreaking empirical research and current scientific debates. The class will be taught in English.

Grading

Grading is based on three pillars: Active participation during the semester (homework assignments, in-class participation, 30%), your presentation in the Übung (30%) and a written exam at the end of the semester (40%). The grading of the homework will be based on two randomly selected weeks throughout the semester. The exam will cover the content of the class. The exam questions will be in English. You are allowed to bring a language dictionary into the exam, but you are not allowed to bring notes. Details about the content and the format of the exam will be announced in the lecture. All part-grades and the final grade will be communicated by the end of the semester.

Workload

The total workload for this course is approximately 135 hours:

Presence time: 30 hours

Preparation and wrap-up of the course: 45 hours

Exam and exam preparation: 60 hours

For further information, please contact the research group Cognition and Consumer Behavior (http://cub.iism.kit.edu/).

Organizational issues
Anmeldung über Campusportal

Literature
Will be made available to enrolled students on the first day of class.

T 3.102 Course: Context Sensitive Systems [T-INFO-107499]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Oral examination	5 CP	graded	Each summer term	1

Events					
ST 2025	2400099	Context Sensitive Systems	1 SWS	Practice /	Riedel
ST 2025	24658	Context Sensitive Systems	2 SWS	Lecture /	Riedel
Exams					
WT 24/25	7500013_17.10.2024	Context Sensitive Systems			Riedel
WT 24/25	7500013_20.03.2025	Context Sensitive Systems			Riedel
WT 24/25	7500113_14.01.2025	Context Sensitive Systems			Riedel
ST 2025	7500013_29.07.2025	Context Sensitive Systems			Riedel
ST 2025	7500365_17.09.2025	Context Sensitive Systems			Riedel
ST 2025	7500365_27.08.2025	Context Sensitive Systems			Riedel

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

T 3.103 Course: Control of Linear Multivariable Systems [T-ETIT-100666]

Responsible: Dr.-Ing. Mathias Kluwe
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	6 CP	graded	Each winter term	1

Events					
WT 24/25	2303177	Control of Linear Multivariable Systems	3 SWS	Lecture / 🗣	Kluwe
WT 24/25	2303179	Control of Linear Multivariable Systems (Tutorial to 2303177)	1 SWS	Practice / 🗣	Fehn
Exams					
WT 24/25	7303177	Control of Linear Multivariable Systems			Kluwe
ST 2025	7303177	Control of Linear Multivariable Systems			Kluwe

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

Assessment
Success is checked as part of a written overall test (120 minutes) of the course.

Prerequisites
none

Recommendations
For a deeper understanding, basic knowledge of system dynamics and control technology is absolutely necessary, as taught in the ETIT Bachelor module "System Dynamics and Control Technology" M-ETIT-102181.

T 3.104 Course: Control of Mobile Machines [T-MACH-111821]

Responsible: Simon Becker
Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	3

Exams			
ST 2025	76-T-MACH-111821	Control of mobile machines	Becker, Geimer

Assessment
The assessment consists of an oral exam (20 min) taking place in the recess period. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
A prerequisite for participation in the examination is the preparation of a semester report. T-MACH-111820 must be passed.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-MACH-111820 - Control of Mobile Machines – Prerequisites must have been passed.

Additional Information
The course is offered in German.

Workload
120 hours

T 3.105 Course: Control of Mobile Machines – Prerequisites [T-MACH-111820]

Responsible: Simon Becker
Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework	0 CP	pass/fail	Each summer term	1

Exams			
ST 2025	76-T-MACH-111820	Control of mobile machines - Advance	Becker, Geimer

Assessment
Preparation of a report on the completion of the semester task

Prerequisites
none

Additional Information
The course is offered in German.

T 3.106 Course: Control Technology [T-MACH-105185]

Responsible: Hon.-Prof. Dr. Christoph Gönnheimer
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	2

Events					
ST 2025	2150683	Control Technology	2 SWS	Lecture / 🗣	Gönnheimer, Gönnheimer
Exams					
WT 24/25	76-T-MACH-105185	Control Technology			Gönnheimer
ST 2025	76-T-MACH-105185	Control Technology			Gönnheimer

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

Assessment
Written Exam (60 min)

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

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

V **Control Technology** — **Lecture (V) On-Site**
2150683, SS 2025, 2 SWS, Language: German, Open in study portal

Content
The lecture control technology gives an integral overview of available control components within the field of industrial production systems.
The first part of the lecture deals with the fundamentals of signal processing and with control peripherals in the form of sensors and actors which are used in production systems for the detection and manipulation of process states.
The second part handles with the function of electric control systems in the production environment. The main focus in this chapter is laid on programmable logic controls, computerized numerical controls and robot controls. Finally the course ends with the topic of cross-linking and decentralization with the help of bus systems.
The lecture is very practice-oriented and illustrated with numerous examples from different branches.

The following topics will be covered:

- Signal processing
- Control peripherals
- Programmable logic controls
- Numerical controls
- Controls for industrial robots
- Distributed control systems
- Field bus
- Trends in the area of control technology

Learning Outcomes:

The students …

- are able to name the electrical controls which occur in the industrial environment and explain their function.
- can explain fundamental methods of signal processing. This involves in particular several coding methods, error protection methods and analog to digital conversion.
- are able to choose and to dimension control components, including sensors and actors, for an industrial application, particularly in the field of plant engineering and machine tools. Thereby, they can consider both, technical and economical issues.
- can describe the approach for projecting and writing software programs for a programmable logic control named Simatic S7 from Siemens. Thereby they can name several programming languages of the IEC 1131.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Organizational issues
Zur Vertiefung des im Rahmen der Lehrveranstaltung erworbenen Wissens werden die theoretischen Vorlesungseinheiten durch Praxiseinheiten im Umfeld der Karlsruher Forschungsfabrik (https://www.karlsruher-forschungsfabrik.de) unterstützt.

The theoretical lectures are complemented by practical lectures in the Karlsruhe Research Factory (https://www.karlsruher-forschungsfabrik.de/en.html) to deepen the acquired knowledge.

Literature
Medien:
Skript zur Veranstaltung wird über ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in ilias (https://ilias.studium.kit.edu/).

T 3.107 Course: Convex Analysis [T-WIWI-102856]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	1

Events					
ST 2025	2550120	Convex Analysis	2 SWS	Lecture / 🗣	Stein
ST 2025	2550121	Exercises Convex Analysis	2 SWS	Practice / 🗣	Stein, Schwarze
Exams					
ST 2025	7900208_SS2025_HK	Convex Analysis			Stein

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

Assessment
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

Recommendations
It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

Additional Information
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 Convex Analysis

2550120, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

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 a 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 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 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 3.108 Course: Cooperative Autonomous Vehicles [T-WIWI-112690]

Responsible: Prof. Dr. Alexey Vinel
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2511450	Cooperative Autonomous Vehicles	2 SWS	Lecture /	Vinel
ST 2025	2511451	Exercise Cooperative Autonomous Vehicles	1 SWS	Practice /	Vinel
Exams					
WT 24/25	79AIFB_CAV_A3	Cooperative Autonomous Vehicles			Vinel
ST 2025	79AIFB_CAV_B5	Cooperative Autonomous Vehicles (Registration until 21.07.2025)			Vinel

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

Assessment
The default assessment of this course is a written examination (60 min).

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

Prerequisites
None.

Workload
135 hours

T 3.109 Course: Copyright [T-INFO-101308]

Responsible: N.N.
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	1

Events					
WT 24/25	24121	Copyright	2 SWS	Lecture / 🗣	Sattler
Exams					
WT 24/25	7500064	Copyright			Sattler
ST 2025	7500064	Copyright			Sattler

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

Assessment
The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 60 minutes.

Prerequisites
None.

Recommendations
None.

T 3.110 Course: Corporate Compliance [T-INFO-101288]

Responsible: Andreas Herzig
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	1

Events					
WT 24/25	2400087	Corporate Compliance	2 SWS	Lecture /	Herzig, Siddiq
Exams					
WT 24/25	7500063	Corporate Compliance			Sattler, Matz
ST 2025	7500063	Corporate Compliance			Sattler

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

T 3.111 Course: Corporate Risk Management [T-WIWI-109050]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	2

Assessment
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. If there are only a small number of participants registered for the exam, we reserve the right to hold an oral examination instead of a written one.
Please note that the exam is only offered in the semester of the lecture as well as in the following semester.

Prerequisites
None

Recommendations
None

Additional Information
The course will be held again in the summer term 2023 at the earliest. Please pay attention to the announcements on our website.

Workload
135 hours

T 3.112 Course: Critical Information Infrastructures [T-WIWI-109248]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	see Annotations	4

Assessment
The exam is no longer offered.

Prerequisites
None.

Additional Information
The course is no longer offered.

Workload
150 hours

T 3.113 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	4,5 CP	graded	Each term	1 terms	2

Events					
WT 24/25	2540441	Current Directions in Consumer Psychology	2 SWS	Others (sons / ⛒	Scheibehenne
ST 2025	2540441	Current Directions in Consumer Psychology	2 SWS	Others (sons / 🗣	Scheibehenne
Exams					
WT 24/25	7900369	Current Directions in Consumer Psychology			Scheibehenne

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

Assessment
Alternative exam assessment. Grading will be based on a continuous basis throughout the semester.

Prerequisites
Strong interest in research. Students who wish to write a master's thesis at our department will be given priority in the allocation of places.

Additional Information
This class covers current research topics at the intersection between Psychology, Consumer Behavior, and Behavioral Economics. Based on weekly reading assignments of current scientific journal publications, students will get a first-hand experience of the ongoing topics and discussions at this exciting and dynamic area of research. The reading list will be announced at the first day of class and will be updated throughout the semester. Grades will be based on weekly participation throughout the semester including short oral presentation of papers in class, active engagement in discussions, and homework assignments. Due to the highly interactive format of this class the number of participants is limited.

Workload
135 hours

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

V Current Directions in Consumer Psychology

2540441, WS 24/25, 2 SWS, Language: English, Open in study portal

Others (sonst.)
Blended (On-Site/Online)

Content
NOTE: sign-up required via the WIWI Portal

This class covers current research topics at the intersection between Psychology, Consumer Behavior, and Behavioral Economics. Based on weekly reading assignments of current scientific journal publications, students will get a first-hand experience of the ongoing topics and discussions at this exciting and dynamic area of research. The reading list will be announced at the first day of class. Grades will be based on continuous participation throughout the semester including short oral presentation of papers in class, active engagement in discussions and homework assignments. This class will be taught in English.

Organizational issues
Participation is restricted to 6 participants. **Please sign up via the WIWI Portal!**

T 3.114 Course: Current Research Topics in Business Information Systems [T-WIWI-109819]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	1 CP	graded	see Annotations	1

Assessment
The type of success control has not yet been determined, but will be announced in good time before the start of the course.

Prerequisites
None

Recommendations
None

Additional Information
New course starting winter term 2019/2020.

Workload
135 hours

T 3.115 Course: Current Topics on BioMEMS [T-MACH-102176]

Responsible: Prof. Dr. Andreas Guber
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	4 CP	graded	Each term	2

Events					
WT 24/25	2143873	Actual topics of BioMEMS	2 SWS	Seminar /	Guber, Ahrens
ST 2025	2143873	Actual topics of BioMEMS	2 SWS	Seminar /	Guber, Ahrens
Exams					
ST 2025	76T-MACH-102176	Current Topics on BioMEMS			Guber

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

Assessment
active participation and own presentation (30 Min.)

Prerequisites
none

Workload
120 hours

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

V Actual topics of BioMEMS

2143873, WS 24/25, 2 SWS, Language: German, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Organizational issues
Aktuell werden im Rahmen dieses Seminars nur Vorträge zu Abschlussarbeiten gehalten. Neue Themen nur auf Anfrage.

V Actual topics of BioMEMS

2143873, SS 2025, 2 SWS, Language: German, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content

- Short introduction to the basics of BioMEMS
- Selected aspects of biomedical engineering and life sciences
- Possible micro technical manufacturing processes
- Selected application examples from research and industry

The seminar includes (bio)medical engineering as well as biological and biotechnological topics in the context of engineering sciences

- Use of microtechnical components and systems in innovative medical products
- Use of microfluidic chip systems in applied biology and biotechnology

Organizational issues
Aktuell werden im Rahmen dieses Seminars nur Vorträge zu Abschlussarbeiten gehalten. Neue Themen nur auf Anfrage.

T 3.116 Course: Customer Relationship Management [T-WIWI-102595]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Assessment
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

T 3.117 Course: Data Protection by Design [T-INFO-108405]

Responsible: Prof. Dr. Oliver Raabe
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law
M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Irregular	2

T 3.118 Course: Data Protection Law [T-INFO-101303]

Responsible: Dr. Johannes Eichenhofer
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	1

Exams			
WT 24/25	7500162	Data Protection Law	Zufall
ST 2025	7500083	Data Protection Law	Zufall

T 3.119 Course: Data Science for Business [T-WIWI-114089]

Responsible: Prof. Dr. Jella Pfeiffer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each summer term	1

Events					
WT 24/25	2540473	Business Data Analytics	2 SWS	Seminar /	Grote, Schulz, Motz
ST 2025	2540466	Data Science for Business (formerly Business Data Analytics: Applications and Tools)	2 SWS	Lecture /	Pfeiffer
ST 2025	2540467	Exercise Data Science for Business (formerly Business Data Analytics: Applications and Tools)	1 SWS	Practice /	Gutschow, Heßler
Exams					
ST 2025	7900183	Data Science for Business			Pfeiffer

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

Assessment
Success is monitored through ongoing elaborations and presentations of tasks and a written exam (60 minutes) at the end of the lecture period. Successful participation in the exercises is a prerequisite for admission to the written examination. The scoring scheme for the overall evaluation will be announced at the beginning of the course.
The number of participants is limited to 50, as this is the only way to ensure conscientious support for the case study. The selection of participants is based on a short letter of motivation (max. 2000 characters including spaces) in the faculty's portal.

Prerequisites
None

Recommendations
Knowledge of programming (particular python) and statistics is helpful.

Additional Information
Together with the lecture, there is an exercise which takes place every second week.

Workload
135 hours

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

V Business Data Analytics
2540473, WS 24/25, 2 SWS, Language: German/English, Open in study portal
Seminar (S) On-Site

Content
wird auf deutsch und englisch gehalten

Organizational issues
Blockveranstaltung, siehe WWW

V Data Science for Business (formerly Business Data Analytics: Applications and Tools)
2540466, SS 2025, 2 SWS, Language: English, Open in study portal
Lecture (V) On-Site

Content
In the course "Data Science for Business":

- You will learn about essential Data Science methods, including clustering and classification techniques (e.g., random forests, SVMs).
- You will understand process models such as CRISP-DM.
- You will explore different types of data, including eye-tracking data, click data, neurophysiological data, sales data, and other business-related data.
- You will gain skills in data visualization and evaluation using programming languages and software tools.

Organizational issues
Application via the WiWi-Portal: https://portal.wiwi.kit.edu/ys/8602

V

Exercise Data Science for Business (formerly Business Data Analytics: Applications and Tools)

Practice (Ü)
On-Site

2540467, SS 2025, 1 SWS, Language: English, Open in study portal

Content
In the course "Data Science for Business":

- You will learn about essential Data Science methods, including clustering and classification techniques (e.g., random forests, SVMs).
- You will understand process models such as CRISP-DM.
- You will explore different types of data, including eye-tracking data, click data, neurophysiological data, sales data, and other business-related data.
- You will gain skills in data visualization and evaluation using programming languages and software tools.

T 3.120 Course: Database Systems and XML [T-WIWI-102661]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	see Annotations	2

Events					
WT 24/25	2511202	Database Systems and XML	2 SWS	Lecture / 🗣	Oberweis
WT 24/25	2511203	Exercises Database Systems and XML	1 SWS	Practice / 🗣	Oberweis, Fritsch
Exams					
WT 24/25	79AIFB_DBX_A4	Database Systems and XML			Oberweis
ST 2025	79AIFB_DBX_A3	Database Systems and XML (Registration until 21.07.2025)			Oberweis

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

Assessment
The examination will be offered for the last time in the winter semester 2025/2026 for first-time students. The last examination opportunity (only for repeaters) is in the summer semester 2026. The assessment takes the form of a written examination (60 minutes) (in accordance with SPO § 4(2)).

Prerequisites
None

Additional Information
The lecture will be held for the last time in the winter semester 2024/25.

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

V Database Systems and XML

2511202, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

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.

Organisational Note:

We are in the process of transitioning the course "Datenbanksysteme und XML" to English. This semester, the **lecture will be held in German** and the **exercise sessions in English**. We will provide the German exercise materials from last semester as supplementary resources. In the exam, you can give answers in both English and German.

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

Organizational issues
Liebe Studierende,

wir sind dabei, die Veranstaltung "Datenbanksysteme und XML" auf Englisch umzustellen. In diesem Semester findet die **Vorlesung auf deutsch** statt und die **Übung auf englisch**. Wir werden die deutschen Übungsunterlagen aus dem letzten Semester ergänzend zur Verfügung stellen. In der Klausur können sowohl englische als auch deutsche Antworten gegeben werden.

Viele Grüße
DBXML-Team

Dear Students,

We are in the process of transitioning the course "Datenbanksysteme und XML" to English. This semester, the **lecture will be held in German** and the **exercise sessions in English**. We will provide the German exercise materials from last semester as supplementary resources. In the exam, you can give answers in both English and German.

Best regards,
DBXML Team

Literature

- M. Klettke, H. Meyer: XML & Datenbanken: Konzepte, Sprachen und Systeme. dpunkt.verlag 2003
- H. Schöning: XML und Datenbanken: Konzepte und Systeme. Carl Hanser Verlag 2003
- W. Kazakos, A. Schmidt, P. Tomchyk: Datenbanken und XML. Springer-Verlag 2002
- R. Elmasri, S. B. Navathe: Grundlagen der Datenbanksysteme. 2009
- G. Vossen: Datenbankmodelle, Datenbanksprachen und Datenbankmanagementsysteme. Oldenbourg 2008

Weitere Literatur wird in der Vorlesung bekannt gegeben.

V Exercises Database Systems and XML

2511203, WS 24/25, 1 SWS, Language: German/English, Open in study portal

Practice (Ü)
On-Site

Content
Organisational note:

We are in the process of transitioning the course "Datenbanksysteme und XML" to English. This semester, the **lecture will be held in German** and the **exercise sessions in English**. We will provide the German exercise materials from last semester as supplementary resources. In the exam, you can give answers in both English and German.

Organizational issues
Liebe Studierende,

wir sind dabei, die Veranstaltung "Datenbanksysteme und XML" auf Englisch umzustellen. In diesem Semester findet die **Vorlesung auf deutsch** statt und die **Übung auf englisch**. Wir werden die deutschen Übungsunterlagen aus dem letzten Semester ergänzend zur Verfügung stellen. In der Klausur können sowohl englische als auch deutsche Antworten gegeben werden.

Viele Grüße
DBXML-Team

Dear Students,

We are in the process of transitioning the course "Datenbanksysteme und XML" to English. This semester, the **lecture will be held in German** and the **exercise sessions in English**. We will provide the German exercise materials from last semester as supplementary resources. In the exam, you can give answers in both English and German.

Best regards,
DBXML Team

T 3.121 Course: Data-Driven Algorithms in Vehicle Technology [T-MACH-112126]

Responsible: Dr. Stefan Scheubner
Organisation: KIT Department of Mechanical Engineering
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	4 CP	graded	Each winter term	1 terms	1

Events					
WT 24/25	2113840	Data-Driven Algorithms in Vehicle Technology	2 SWS	Lecture /	Scheubner
Exams					
WT 24/25	7600001	Data-Driven Algorithms in Vehicle Technology			Scheubner
ST 2025	7600001	Data-Driven Algorithms in Vehicle Technology			Scheubner

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

Assessment
Written Examination

Duration: 90 minutes

Additional Information
The course is offered in English.

Workload
120 hours

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

V Data-Driven Algorithms in Vehicle Technology

2113840, WS 24/25, 2 SWS, Language: English, Open in study portal

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

Content
Course Syllabus: Data-Driven Algorithms in Vehicle Technology
Motivation for the Course: Nowadays, engineers often develop technical systems using a combination of hard- and software. This is true especially for modern passenger vehicle development. In a digitalized world, such developments are built on knowledge gained from relevant data sources, e.g. the vehicle sensors. Therefore, engineers in automobile technology need qualifications from data science to successfully create new functionalities in the cars. To prevent remaining purely theoretical, the algorithms in this course are explained using a real-world problem of “EV Routing”. Students have the opportunity to test methods in Python with frequent exercises presented.
Goal of the Course: Students have a basic understanding of data-driven algorithms such as Markov Models, Machine Learning or Monte-Carlo Methods. The approach for building data-driven models in automobile technology are known to students and they are able to test algorithms in the programming language “Python”. Furthermore, students have learnt how to analyse the algorithm performance.
Content:
1. Introduction to function development as well as the prerequisites for the course (e.g. Fundamentals for running Python code)
2. Fundamentals for EV Routing and relevant data sources
3. Parameter estimation and state classification algorithms to determine the current situation of the vehicle
4. Learning methods for driver behaviour
5. Forecast algorithms to predict future energy consumption of an electric vehicle

Organizational issues
Das Vorlesungsmaterial wird auf ILIAS bereitgestellt. Das ILIAS-Passwort erhalten Sie unter https://fast-web-01.fast.kit.edu/PasswoerterIlias/

Die erste VL am 22.10.24 um 14:00 Uhr findet in Präsenz am Campus Ost, Geb. 70.04, Raum 219 statt.

Alle weiteren Vorlesungsinhalte werden als Videoaufzeichnungen in ILIAS bereit gestellt. In regelmäßigen Abständen wird es Sprechstunden geben. Die genauen Termine erfahren Sie dann über den entsprechenden ILIAS Kurs

T 3.122 Course: Deployment of Database Systems [T-INFO-101317]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Oral examination	5 CP	graded	Each winter term	1

Events					
WT 24/25	2400111	Datenbankeinsatz	3 SWS	Lecture / 🗣	Böhm, Mülle
Exams					
WT 24/25	7500007	Deployment of Database Systems			Böhm, Mülle
WT 24/25	7500331	Deployment of Database Systems			Böhm
ST 2025	7500090	Deployment of Database Systems			Böhm, Reimann

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

Additional Information
Exams are currently not taking place !!!

T 3.123 Course: Derivatives [T-WIWI-102643]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2530550	Derivatives	2 SWS	Lecture / 🗣	Uhrig-Homburg
ST 2025	2530551	Übung zu Derivate	1 SWS	Practice / 🗣	Dinger, Uhrig-Homburg
Exams					
WT 24/25	7900051	Derivatives			Uhrig-Homburg
ST 2025	7900111	Derivatives			Uhrig-Homburg

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

Assessment
Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination or as an open-book examination (alternative exam assessment).

A bonus can be earned by correctly solving at least 50% of the posed bonus exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites
None

Recommendations
None

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

V Derivatives

2530550, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Literature

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

Weiterführende Literatur:

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

T 3.124 Course: Design and Operation of Industrial Plants and Processes [T-WIWI-114173]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	5,5 CP	graded	see Annotations	1

Exams			
ST 2025	7981952	Planning and Management of Industrial Plants	Schultmann

Assessment
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.

Prerequisites
None

Recommendations
None

Additional Information
Please note that the course has been renamed and is now to be found under the new designation **'Design and Operation of Industrial Plants and Processes'** with the identifier **'T-WIWI-114618'**.

T 3.125 Course: Design Basics in Highway Engineering [T-BGU-106613]

Responsible: Dr.-Ing. Matthias Zimmermann
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each term	1 terms	1

Events					
ST 2025	6200408	Design Basics in Highway Engineering	2 SWS	Lecture / 🗣	Zimmermann, Stelzenmüller

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

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.126 Course: Design Thinking [T-WIWI-102866]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Irregular	1

Events					
WT 24/25	2545008	Design Thinking (Track 1)	2 SWS	Seminar /	Terzidis, Malik, Jochem
ST 2025	2545008	Design Thinking (Track 1)	2 SWS	Seminar /	Osaro, Jochem, Terzidis
Exams					
WT 24/25	7900084	Design Thinking (Track 1)			Terzidis
ST 2025	7900053	Design Thinking (Track 1)			Terzidis

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

Assessment
Alternative exam assessments (§4(2), 3 SPO).

Prerequisites
None

Recommendations
None

Additional Information
Please note that the number of participants is limited. Registration takes place via the Wiwi-Portal. The seminar contents will be published on the institute's homepage.

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

V Design Thinking (Track 1)

2545008, WS 24/25, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Course Content:

Design Thinking is a user-centric innovation management method. The iterative process first analyzes the problem space and builds a sound understanding of the future users. Subsequently, ideas for the solution are generated, prototypes are created and tested by the user group. The result is a proven and validated product.

Learning Objectives
During the seminar, the students learn basic procedures for achieving user-centric innovations. These are concrete methods that start with the potential user of certain products and services. The method is problem-oriented and emphasizes the specific customer situation. After attending the seminar, the students have a clear understanding of the need to explore end-user needs and are able to independently apply the methods of Design Thinking for developing market-driven innovations at a basic level.

Credentials:

Registration is via the Wiwi portal.

ATTENTION: Creditability in the seminar module: The seminar is NOT credited in the seminar module! Crediting is only possible in the EXPERT MODULE ENTREPRENEURSHIP.

Organizational issues
Registration is via the Wiwi portal.

In the seminar you will work on a project in teams of 4-5 persons. The groups are formed in the seminar

V

Design Thinking (Track 1)

2545008, SS 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
Content

Design Thinking is a user-centric innovation management method. The iterative process first analyzes the problem space and builds a sound understanding of the future users. Subsequently, ideas for the solution are generated, prototypes are created, and tested by the user group. The result is a proven and validated product.

Learning Objectives

During the seminar, the students learn basic procedures for achieving user-centric innovations. These are concrete methods that start with the potential user of certain products and services. The method is problem-oriented and emphasizes the specific customer situation. After attending the seminar, the students have a clear understanding of the need to explore end-user needs and are able to independently apply the methods of Design Thinking for developing market-driven innovations at a basic level.

Credentials:

ATTENTION: Creditability in the seminar module: The seminar is NOT credited in the seminar module! Crediting is only possible in the EXPERT MODULE ENTREPRENEURSHIP.

Organizational issues
ATTENTION: The seminar will take place outside in the city forest (about 10 minutes by bike from the city center). There will be an indoor option in case of bad weather. Detailed information about the location will be announced later.

Dates:

Mo, 26.05.2025; 09:30 - 17:00
Mo, 30.06.2025; 09:30 - 17:00
Mo, 21.07.2025; 09:00 - 13:00

Registration is via the Wiwi-Portal.

T 3.127 Course: Design Thinking in Practice [T-WIWI-113664]

Responsible: Jennifer Scheydt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each summer term	1

Assessment
Non exam assessment consisting of a presentation of the results and a seminar paper (written in the group).
The grade is composed of 70% of the grade for the written work and 30% of the grade for the presentation.

Prerequisites
None

Recommendations
Prior attendance of the course Innovation Management is recommended.

Workload
90 hours

T 3.128 Course: Design, Construction and Sustainability Assessment of Buildings I [T-WIWI-102742]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Assessment
The examination offer has been discontinued. For all those who still have to complete the module examination with this exam, there is the last opportunity for an oral exam in WS 22/23. This must be arranged directly at the institute. If this is a repeat examination for which the first attempt was taken in writing, the approval of the examination board must be obtained in advance via the examination office.

Prerequisites
None

Recommendations
A combination with the module *Real Estate Management* and with engineering science modules in the area of building physics and structural design is recommended.

T 3.129 Course: Design, Construction and Sustainability Assessment of Buildings II [T-WIWI-102743]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Assessment
The examination offer has been discontinued. For all those who still have to complete the module examination with this exam, there is the last opportunity for an oral exam in WS 22/23. This must be arranged directly at the institute. If this is a repeat examination in which the first attempt was taken in writing, the approval of the examination board must be obtained in advance via the examination office.

Prerequisites
None

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

T 3.130 Course: Designing Interactive Systems: Human-AI Interaction [T-WIWI-113465]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2540558	Designing Interactive Systems: Human-AI Interaction	3 SWS	Lecture /	Mädche, Seitz
Exams					
WT 24/25	7900205	Designing Interactive Systems			Mädche
ST 2025	7900299	Designing Interactive Systems: Human-AI Interaction			Mädche

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

Assessment
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.

Additional Information
The course is held in english.

Workload
135 hours

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

V Designing Interactive Systems: Human-AI Interaction

2540558, SS 2025, 3 SWS, Language: English, Open in study portal

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

Content
Description

Computers have evolved from batch processors towards highly interactive systems. With the rapid progress in the field of artificial intelligence, computers can now learn and adapt to their environment, simulate human intelligence processes as well as support or even take over tasks from humans. This offers great possibilities, but at the same time raises new challenges for the successful design of interactive systems.

The aim of this course is to introduce advanced concepts and theories as well as current practice of designing interactive systems. A specific focus is set on designing AI-based interactive systems for individuals and groups at work ranging from personal productivity assistants to AI-augmented virtual collaboration.

The course is complemented with hands-on exercises and a design capstone project in cooperation with an industry partner. In the project, students in a team effort apply state-of-the-art design methods & techniques and create an interactive system design prototype with a specific focus on human-AI interaction.

Learning objectives

- Explain what interactive systems are and how they can be conceptualized
- Describe the unique characteristics of human-AI interaction and their impact on designing interactive systems
- Understand the human-centered design process and know how to apply corresponding methods and tools
- Understand the concepts and theoretical foundations that guide the design of interactive systems
- Know key concepts, design principles and design methods for contemporary interactive systems focusing on on human-AI interaction
- Get hands-on experience by applying lecture content in a design capstone project

Prerequisites

No specific prerequisites are required for the lecture

Literature

Die Vorlesung basiert zu einem großen Teil auf

· Benyon, D. (2014). Designing interactive systems: A comprehensive guide to HCI, UX and interaction design (3. ed.). Harlow: Pearson.

Weiterführende Literatur wird in der Vorlesung bereitgestellt.

T 3.131 Course: Development of Sustainable, Digital Business Models [T-WIWI-113663]

Responsible: Prof. Dr. Marion Weissenberger-Eibl
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each winter term	1

Events					
WT 24/25	2500043	Development of Sustainable Digital Business Models	2 SWS	Seminar / 🗣	Weissenberger-Eibl
Exams					
WT 24/25	7900050	Development of Sustainable Business Models			Weissenberger-Eibl

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

Assessment
Non exam assessment. The final grade is composed 50% of the grade of the written paper (ca. 5 Pages /Person) and 50% of the presentation of the results.

Prerequisites
None

Self Service Assignment of Supplementary Studies
This course can be used for self service assignment of grades acquired from the following study providers:

- Personalentwicklung und Berufliche Ausbildung

Recommendations
Prior attendance of the course Innovation Management is recommended.

Workload
90 hours

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

V Development of Sustainable Digital Business Models

2500043, WS 24/25, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content
The topic of sustainability is becoming increasingly important for companies in Europe. For example, the demand for sustainable products has risen sharply in many sectors. More and more companies are obliged by guidelines and standards to report on the sustainability of their activities. At the same time, the digital transformation is progressing and offers companies opportunities to implement or communicate their plans digitally. The seminar examines how the topic of sustainability is anchored in the digital business modelling of companies.

Students first learn about the dimensions of business models and sustainability. The seminar then discusses various concepts from the literature that take sustainability into account in business modelling. Students develop their own approach to sustainable digital business modelling and apply it to selected company examples from different sectors. The results are 1) presented and discussed in presentations and 2) recorded in seminar papers.

T 3.132 Course: Digital Democracy [T-WIWI-113160]

Responsible: Jonas Fegert
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	4,5 CP	graded	Each winter term	1 terms	1

Events					
WT 24/25	00053	Übung zur Digital Democracy	1 SWS	Practice / 🧩	Stein
WT 24/25	2500045	Digital Democracy - Challenges and Opportunities of the Digital Society	2 SWS	Seminar / 🧩	Fegert, Stein, Bezzaoui
WT 24/25	2600052	Digital Democracy	2 SWS	Lecture / 🧩	Fegert
Exams					
WT 24/25	00059	Digital Democracy			Weinhardt

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

Assessment
Alternative exam assessment. The examination consists of two parts (presentation and oral exam). Details on the design of the exam will be announced at the beginning of the course.

Additional Information
Limited to 25 students. Application (cover letter) via the Wiwi-portal.

Workload
135 hours

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

V Digital Democracy

2600052, WS 24/25, 2 SWS, Language: English, Open in study portal

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

Content
The "Digital Democracy" Lecture deals with opportunities and challenges of democracy and participation in a digitalized world. Social networks and other platforms have become a central place for human interaction.

These technologies open up many possibilities to connect people, promote societal discourse, and organize social movements. On the other hand, they are also used to undermine democracy by extremist forces.

One example is the spread of disinformation through social media, which can undermine trust in democratic institutions and exacerbate divisions in society. Big tech actors pursue their own economically driven interests, some of which run counter to societal ones.

So to what extent can Internet platforms help strengthen social discourse? And what measures can be taken to promote the quality and diversity of discourse in the digital world? What role do big tech players play in digital democracy and how can their interests be reconciled with democratic principles? These and many more questions will be explored in the lecture. The lecture introduces theoretical foundations and evidence-based research on digital democracy. It will address the following questions: What characterizes deliberative democracies, how do democracies change, and what can damage them? How does social polarization emerge and what drives it - off- and online. Accordingly, different platform types and phenomena of disinformation, such as clickbait, will be presented. The last part of the lecture series will deal with the search for approaches and alternatives to these problems.

The exercise session connected to this lecture is conducted in cooperation with an NGO and applies the lecture content in a practical context: The formulation of a data-based policy recommendation.

Organizational issues
Die Teilnahme am Kurs ist auf 25 Plätze beschränkt, diese erfolgt über das Wiwi-Portal: https://portal.wiwi.kit.edu/ys/8373

Der Kick-off findet am Fr, 25.10.2024 um 09:00 im 11.40 Seminarraum 231 statt.

T 3.133 Course: Digital Health [T-WIWI-109246]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	see Annotations	3

Events					
WT 24/25	2511402	Digital Health	2 SWS	Lecture /	Sunyaev, Thiebes, Schmidt-Kraepelin
Exams					
WT 24/25	7900068	Digital Health			Sunyaev

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

Assessment
The examination will no longer be offered from summer semester 2025.

Prerequisites
None.

Additional Information
The course is no longer offered.

Workload
120 hours

T 3.134 Course: Digital Marketing [T-WIWI-112693]

Responsible: Prof. Dr. Ann-Kristin Kupfer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2571185	Digital Marketing	2 SWS	Lecture / 🗣	Kupfer
ST 2025	2571186	Digital Marketing Exercise	1 SWS	Practice / 🗣	Kopp
Exams					
ST 2025	7900064	Digital Marketing			Kupfer

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

Assessment
Success is assessed in the form of an examination of another type. The following aspects are included in the assessment:

- Elaboration and presentation of a group task
- Written exam

Further details on the organization of the performance and the points system for the assessment will be announced in the lecture.

Prerequisites
None

Recommendations
Students are highly encouraged to actively participate in class.

Workload
135 hours

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

V Digital Marketing

2571185, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Students learn the theoretical foundations of digital marketing and its most important concepts. They develop an understanding both for the digital consumer and the digital environment. Special emphasis will be given to digital marketing strategies and practices, such as content marketing and influencer marketing. A tutorial offers the opportunity to apply the key learnings of the lecture as part of a group work.

The learning objectives are as follows:

- Getting to know the theoretical foundations of digital marketing
- Evaluating digital marketing strategies and practices (e.g., in the context of content marketing and influencer marketing)
- Fostering critical and analytical thinking skills and the application of knowledge to marketing problems
- Improving English skills

Total time required for 4.5 credit points: approx. 135 hours
Attendance time: 30 hours
Self-study: 105 hours

Organizational issues
Termine werden bekannt gegeben.

T 3.135 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	1,5 CP	graded	Each summer term	1

Events					
ST 2025	2571156	Digital Marketing and Sales in B2B	1 SWS	Others (sons / 🗣)	Konhäuser
Exams					
ST 2025	7900297	Digital Marketing and Sales in B2B			Klarmann

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

Assessment
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.

Additional Information
This course will not take place in the summer term 2023, but is expected to be offered again on a regular basis starting in the summer term 2024.
Participation requires an application. The application period starts at the beginning of the semester. More information can be obtained on the website of the research group Marketing and Sales (marketing.iism.kit.edu). 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.

Workload
45 hours

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

V **Digital Marketing and Sales in B2B** — **Others (sonst.) On-Site**
2571156, SS 2025, 1 SWS, Language: English, Open in study portal

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 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 B5.26, Geb. 10.81, Termine werden noch bekannt gegeben

Literature
-

T 3.136 Course: Digital Markets and Market Design [T-WIWI-112228]

Responsible: Prof. Dr. Adrian Hillenbrand
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2500035	Digital Markets and Market Design	2 SWS	Lecture / 🗣	Hillenbrand
WT 24/25	2500036	Digital Markets and Market Design	1 SWS	Practice / 🗣	Hillenbrand
Exams					
WT 24/25	7900354	Digital Markets and Market Design			Hillenbrand
ST 2025	7900249	Digital Markets and Market Design			Hillenbrand

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

Assessment
The assessment consists of a written exam (60 minutes).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Additional Information
The lecture will be held in English.

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

V Digital Markets and Market Design

2500035, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Online Markets determine our everyday lives. At the same time rapid technological advancements quickly change the landscape of online markets posing challenges for market design and consumer protection. In this course we apply theoretical economic models in the area of digital markets in order to make sense of current developments. Topics include consumer search, algorithmic pricing, recommender systems and steering, price discrimination and matching markets. We also discuss the potential effects of current policies like the Digital Markets Act and Digital Services Act on market outcomes.

V Digital Markets and Market Design

2500036, WS 24/25, 1 SWS, Language: English, Open in study portal

Practice (Ü)
On-Site

Content
Exercise Session for the course "Digital Markets and Market Design

Organizational issues
Jede zweite Woche eine Übung

T 3.137 Course: Digital Services: Foundations [T-WIWI-111307]

Responsible: Dr. Carsten Holtmann
Dr. Michael Vössing
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2595466	Digital Services: Foundations	2 SWS	Lecture / 🔀	Holtmann, Vössing
ST 2025	2595467	Exercise Digital Services: Foundations	1 SWS	Practice / 🔀	Vössing
Exams					
WT 24/25	7900062	Digital Services: Foundations			Satzger
ST 2025	7900165	Digital Services: Foundations			Satzger

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

Assessment
The assessment consists of a written exam (60 min) (§4(2), 1 of the examination regulations).

Additional Information
The course will be offered in a hybrid format starting in the summer semester of 2025. Lectures will generally take place online. In exceptional cases, such as the opening lecture, the lecture will be held in person and simultaneously streamed online. The exercises will take place in person and may, in some cases, use the time slots of both the lecture and the exercise.Please check the announcements in the ILIAS forum.

Workload
135 hours

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

V Digital Services: Foundations

2595466, SS 2025, 2 SWS, Language: English, Open in study portal

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

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

Building on a systematic categorization of different types of services and on the general notion of “value co-creation”, we cover concepts and foundations for engineering and managing ICT-based digital services, allowing for further specialization in other KSRI/IISM courses at the Master level. Topics in this course include an introduction to services and human-centered design, as well as an introduction to AI-based services, and IoT-based services. Additionally, essential concepts for the design of AI-based services are covered, such as fairness, sustainability, and human-AI collaboration in services. In this context, regulation approaches for novel technologies emerging out of the fast-paced world of digital services are discussed from legislation and industry perspectives. Finally, the lecture lays the practical foundations for implementing, distributing, and managing services at scale. Besides those contents, the lecture entails first-hand research insights, exercises and discussion sessions, and guest lectures that will illustrate the relevance of digital services in today’s world.

Literature

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

T 3.138 Course: Digital Services: Innovation & Business Models [T-WIWI-112757]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	2

Events					
ST 2025	2595468	Digital Services: Innovation & Business Models	1.5 SWS	Lecture /	Satzger, Benz, Schüritz, Heinz
ST 2025	2595469	Übung zu Digital Services: Innovation & Business Models	1.5 SWS	Practice /	Satzger, Benz, Schüritz, Heinz
Exams					
WT 24/25	7900039	Digital Services: Innovation & Business Models			Satzger
ST 2025	7900163	Digital Services: Innovation & Business Models			Satzger

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

Assessment
The assessment consists of a written exam (60 min.).

Prerequisites
None

Recommendations
None

Additional Information
The course "Digital Services: Innovation & Business Models" replaces the course Service Innovation, based on a revised course concept and content. The focus will be on the closer integration of the topics of service innovation and digitalization. Previous foundational content (e.g., on service innovation challenges or human-centered innovation methods) will remain. New content will cover topics such as digital platforms and ecosystems, IoT and smart service innovation, and business models.

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

V Digital Services: Innovation & Business Models

2595468, SS 2025, 1.5 SWS, Language: English, Open in study portal

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

Content
Leveraging data and digital technologies for business success is a key challenge for organizations as they need to

- get aware of the newly arising potential
- develop suitable digital services that are user-centric and individualized
- “servitize” their offering portfolio and business model
- transform their organizations

This course will equip students with concepts and methods to tackle this challenge along two dimensions: First, we will cover innovation as a concept as well as apply contemporary innovation methods (like Design Thinking, Open Innovation) to the services space. Second, we deal with leveraging innovation to develop new business models (including multi-partner concepts in platforms or ecosystems), to servitize existing business models (e.g., via product-service-systems), and to accordingly transform the organization.

The course links innovation and business model theories with practical examples and exercises. Students are asked to actively engage in the discussion.

Organizational issues
The course will be offered in the form of a flipped classroom concept. The lecture will be recorded in advance and made available online. During the “in presence” sessions, the contents of the lecture will be applied and expanded on.

Literature

- Böhmann, T./ Leimeister, J.M./ Möslein, K. (2014), Service Systems Engineering, Business & Information Systems Engineering, Vol. 6, No.2, 73-79.
- Cardoso, J., Fromm, H., Nickel, S., Satzger, G., Studer, R., & Weinhardt, C. (Eds.) (2015). Fundamentals of service systems (Vol. 12). Heidelberg: Springer.
- Chesbrough, H. (2011). Open services innovation: Rethinking your business to grow and compete in a new era. John Wiley & Sons.
- Rogers, S. (2003). Diffusion of Innovations. 5. ed. New York: Free Press.
- Satzger, G., Benz, C., Böhmann, T., Roth, A. (2022). Servitization and Digitalization as Siamese Twins – Concepts and Research Agenda. Edvardsson/Tronvoll (eds.): The Palgrave Handbook of Service Management, 967-989.
- Uebernickel, F., Brenner, W., Pukall, B., Naef, T., & Schindlholzer, B. (2015). Design Thinking: Das Handbuch. Frankfurt am Main: Frankfurter Allgemeine Buch.
- Vargo, S.L., Lusch, R.F. (2017). Service-dominant logic 2025. Int. J. Res. Mark. 34, 46–67.
- Weill, P.; Woerner, S.L. (2018): "What's your Digital Business Model? – Six Questions to Help you Build the Next-Generation Enterprise". Boston, Massachusetts: Harvard Business Review Press.

V Übung zu Digital Services: Innovation & Business Models

Practice (Ü)
On-Site

2595469, SS 2025, 1.5 SWS, Language: English, Open in study portal

Content
Leveraging data and digital technologies for business success is a key challenge for organizations as they need to

- get aware of the newly arising potential
- develop suitable digital services that are user-centric and individualized
- "servitize" their offering portfolio and business model
- transform their organizations

This course will equip students with concepts and methods to tackle this challenge along two dimensions: First, we will cover innovation as a concept as well as apply contemporary innovation methods (like Design Thinking, Open Innovation) to the services space. Second, we deal with leveraging innovation to develop new business models (including multi-partner concepts in platforms or ecosystems), to servitize existing business models (e.g., via product-service-systems), and to accordingly transform the organization.

The course links innovation and business model theories with practical examples and exercises. Students are asked to actively engage in the discussion.

Organizational issues
The course will be offered in the form of a flipped classroom concept. The lecture will be recorded in advance and made available online. During the "in presence" sessions, the contents of the lecture will be applied and expanded on.

Literature

- Böhmann, T./ Leimeister, J.M./ Möslein, K. (2014), Service Systems Engineering, Business & Information Systems Engineering, Vol. 6, No.2, 73-79.
- Cardoso, J., Fromm, H., Nickel, S., Satzger, G., Studer, R., & Weinhardt, C. (Eds.) (2015). Fundamentals of service systems (Vol. 12). Heidelberg: Springer.
- Chesbrough, H. (2011). Open services innovation: Rethinking your business to grow and compete in a new era. John Wiley & Sons.
- Rogers, S. (2003). Diffusion of Innovations. 5. ed. New York: Free Press.
- Satzger, G., Benz, C., Böhmann, T., Roth, A. (2022). Servitization and Digitalization as Siamese Twins – Concepts and Research Agenda. Edvardsson/Tronvoll (eds.): The Palgrave Handbook of Service Management, 967-989.
- Uebernickel, F., Brenner, W., Pukall, B., Naef, T., & Schindlholzer, B. (2015). Design Thinking: Das Handbuch. Frankfurt am Main: Frankfurter Allgemeine Buch.
- Vargo, S.L., Lusch, R.F. (2017). Service-dominant logic 2025. Int. J. Res. Mark. 34, 46–67.
- Weill, P.; Woerner, S.L. (2018): "What's your Digital Business Model? – Six Questions to Help you Build the Next-Generation Enterprise". Boston, Massachusetts: Harvard Business Review Press.

T 3.139 Course: Digitalization from Product Concept to Production [T-MACH-113647]

Responsible: Dr.-Ing. Marc Wawerla
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	4 CP	graded	Each winter term	1 terms	1

Events					
WT 24/25	2149702	Digitalization from Product Concept to Production	2 SWS	Lecture / 🗣	Wawerla
Exams					
WT 24/25	76-T-MACH-113647	Digitalization from Product Concept to Production			Wawerla

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

Assessment
Alternative test achievement (graded):
- Written processing of a case study (weighting 50%) and
- Presentation of the results (ca. 10 min.) followed by a colloquium (ca. 30 min.), (weighting 50%)

Prerequisites
T-MACH-110176 may not have started.

Additional Information
The course is offered in English.

For organisational reasons, the number of participants for the course is limited. As a result, a selection process will take place. Further information for application can be found via: https://www.wbk.kit.edu/english/education.php.

Workload
120 hours

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

V Digitalization from Product Concept to Production

2149702, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The lecture deals with Digitalization along the entire value chain end-to-end, with a focus on production and supply chain. Within this context, concepts, tools, methods, technologies and concrete applications in the industry are presented. Furthermore, the students get the opportunity to get first-hand insights into the digitalization journey of a German technology company.

Main topics of the lecture:

- Concepts and methods such as disruptive innovation and agile project management
- Overview on technologies at disposal
- Practical approaches in innovation
- Applications in industry
- Field trip to ZEISS

Learning Outcomes:

The students …

- are capable to comment on the content covered by the lecture.
- are able to analyze and evaluate the suitability of digitalization technologies in the optical industry.
- are able to assess the applicability of methods such as disruptive innovation and agile project management.
- are able to appreciate the practical challenges to digitalization in industry.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Organizational issues
Aus organisatorischen Gründen ist die Teilnehmeranzahl für die Lehrveranstaltung begrenzt. Infolgedessen wird ein Auswahlprozess stattfinden. Weitere Informationen zur Bewerbung sind unter https://www.wbk.kit.edu/studium-und-lehre.php zu finden.

For organisational reasons, the number of participants for the course is limited. As a result, a selection process will take place. Further information for application can be found via:
https://www.wbk.kit.edu/english/education.php.

T 3.140 Course: Disassembly Process Engineering [T-BGU-101850]

Responsible: Prof. Dr.-Ing. Sascha Gentes
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each summer term	1 terms	1

Events					
ST 2025	6243803	Dismantling Techniques	2 SWS	Lecture / Practice (/	Gentes
Exams					
WT 24/25	8240101850	Disassembly Process Engineering			Gentes
ST 2025	8240101850	Disassembly Process Engineering			Gentes

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

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.141 Course: Discrete-Event Simulation in Production and Logistics [T-WIWI-102718]

Responsible: Hon.-Prof. Dr. Sven Spieckermann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

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

Events					
ST 2025	2550488	Ereignisdiskrete Simulation in Produktion und Logistik	3 SWS	Lecture / 🗣	Spieckermann
Exams					
ST 2025	7900244	Discrete-Event Simulation in Production and Logistics			Spieckermann

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

Assessment
The assessment consists of a written paper and an oral exam of about 30-40 min (alternative exam assessment).

Prerequisites
None

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

Additional Information
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 2025, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Simulation of production and logistics systems is an interdisciplinary subject connecting expert knowledge from production management and operations research with mathematics/statistics as well as computer science and software engineering. With completion of this course, students know statistical foundations of discrete simulation, are able to classify and apply related software applications, and know the relation between simulation and optimization as well as a number of application examples. Furthermore, students are enabled to structure simulation studies and are aware of specific project scheduling issues.

Organizational issues
Den Bewerbungszeitraum finden Sie auf der Veranstaltungswebseite im Lehre-Bereich unter dol.ior.kit.edu

Literature

- Gutenschwager K., Rabe M., Spieckermann S. und S. Wenzel (2017): Simulation in Produktion und Logistik, Springer, Berlin.
- Banks J., Carson II J. S., Nelson B. L., Nicol D. M. (2010) Discrete-event system simulation, 5.Aufl., Pearson, Upper Saddle River.
- Eley, M. (2012): Simulation in der Logistik - Einführung in die Erstellung ereignisdiskreter Modelle unter Verwendung des Werkzeuges "Plant Simulation“, Springer, Berlin und Heidelberg
- Kosturiak, J. und M. Gregor (1995): Simulation von Produktionssystemen. Springer, Wien und New York.
- Law, A. M. (2015): Simulation Modeling and Analysis. 5th Edition, McGraw-Hill, New York usw.
- Liebl, F. (1995): Simulation. 2. Auflage, Oldenbourg, München.
- Noche, B. und S. Wenzel (1991): Marktspiegel Simulationstechnik. In: Produktion und Logistik. TÜV Rheinland, Köln.
- Pidd, M. (2004): Computer Simulation in Management Science. 5th Edition, Wiley, Chichester.
- Robinson S (2004) Simulation: the practice of model development and use. John Wiley & Sons, Chichester
- VDI (2014): Simulation von Logistik-, Materialfluß- und Produktionssystemen. VDI Richtlinie 3633, Blatt 1, VDI-Verlag, Düsseldorf.

T 3.142 Course: Dynamic Macroeconomics [T-WIWI-109194]

Responsible: Prof. Dr. Johannes Brumm
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	4

Events					
WT 24/25	2560402	Dynamic Macroeconomics	2 SWS	Lecture /	Brumm
WT 24/25	2560403	Übung zu Dynamic Macroeconomics	1 SWS	Practice /	Hußmann
Exams					
WT 24/25	7900261	Dynamic Macroeconomics			Brumm

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

Assessment
The assessment is a written exam (60 min.).

Prerequisites
None.

Workload
135 hours

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

V Dynamic Macroeconomics

2560402, WS 24/25, 2 SWS, Language: English, Open in study portal

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

Content
This course addresses macroeconomic questions on an advanced level. The main focus of this course is on dynamic programming and its fundamental role in modern macroeconomics. In the first part of the course, the necessary mathematical tools are introduced as well as basic applications in labor economics, economic growth and business cycle analysis. In the second part of the course, these basic models are expanded to incorporate household heterogeneity in various forms: Models of economic inequality to analyze the distributional impact of tax policies and models of overlapping generations to analyze the impact of social security reforms or changes in government debt. Finally, advanced methods based on sparse grids or neural nets are introduced to solve high-dimensional models. The course pursues a hands-on approach so that students not only gain theoretical insights but also learn numerical tools to solve dynamic economic models using the programming language Python.

Literature
Literatur und Skripte werden in der Veranstaltung angegeben.

T 3.143 Course: Economic Decision Making [T-WIWI-114174]

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	4,5 CP	graded	Each winter term	1 terms	1

Assessment
Alternative exam assessment. The grading includes the following aspects:

- a written exam (60 minutes)
- a presentation during the exercise.

The scoring system for the grading will be announced at the beginning of the course.

Prerequisites
Registration via the CAMPUS Portal is required for participation in the Übung. The Übung is a prerequisite for the exam.

Additional Information
The judgments and decisions that we make can have long ranging and important consequences for our (financial) well-being and individual health. Hence, the goal of this lecture is to gain a better understanding of how people make judgments and decisions and the factors that influences their behavior. We will look into simple heuristics and mental shortcuts that decision makers use to navigate their environment, in particular so in an economic context. Following this, the lecture will provide an overview into social and emotional influences on decision making. In the second half of the semester we will look into some more specific topics including self-control, nudging, and food choice. The last part of the lecture will focus on risk communication and risk perception. We will address these questions from an interdisciplinary perspective at the intersection of Psychology, Behavioral Economics, Marketing, Cognitive Science, and Biology. Across all topics covered in class, we will engage with basic theoretical work as well as with groundbreaking empirical research and current scientific debates.
The workload of the class is 4.5 ECTS. This consists of 3 ETCS for the lecture and 1.5 ETCS for the Übung. Details about the Übung will be communicated at the first day of the class.

Workload
135 hours

T 3.144 Course: Economics and Behavior [T-WIWI-102892]

Responsible: Prof. Dr. Nora Szech
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2560137	Economics and Behavior	2 SWS	Lecture / 🗣	Rau
WT 24/25	2560138	Übung zu Economics and Behavior	1 SWS	Practice / 🗣	Zhao
Exams					
WT 24/25	7900134	Exam Economics and Behavior			Puppe
ST 2025	7900154	Exam Economics and Behavior (2)			Puppe

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

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

Prerequisites
None

Recommendations
Basic knowledge of microeconomics and statistics are recommended. A background in game theory is helpful, but not absolutely necessary.

Additional Information
The lecture will be held in English.

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

V Economics and Behavior

2560137, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The course covers topics from behavioral economics with regard to contents and methods. In addition, the students gain insight into the design of economic experiments. Furthermore, the students will become acquainted with reading and critically evaluating current research papers in the field of behavioral economics.

The students

- gain insight into fundamental topics in behavioral economics;
- get to know different research methods in the field of behavioral economics;
- learn to critically evaluate experimental designs;
- get introduced to current research papers in behavioral economics;
- become acquainted with the technical terminology in English.

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

The grade will be determined in a final written exam. Students can earn a bonus to the final grade by successfully participating in the exercises.

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

The lecture will be held in English.

Recommendations:

Basic knowledge of microeconomics and statistics are recommended. A background in game theory is helpful, but not absolutely necessary.

Literature
Kahnemann, Daniel: Thinking, Fast and Slow. Farrar, Straus and Giroux, 2011.

T 3.145 Course: Economics I: Microeconomics [T-WIWI-102708]

Responsible: Prof. Dr. Clemens Puppe
Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each winter term	1

Events					
WT 24/25	2610012	Economics I: Microeconomics	3 SWS	Lecture /	Reiß, Potarca
WT 24/25	2610013			Tutorial (/	Reiß, Potarca
Exams					
WT 24/25	7910001	Economics I: Microeconomics			Reiß
WT 24/25	7910002	Economics I: Microeconomics			Reiß

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

Assessment
The assessment consists of a written exam (120 min) following §4, Abs. 2, 1 of the examination regulation.

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

Prerequisites
None

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

V Economics I: Microeconomics

2610012, WS 24/25, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
This course provides a solid grounding in microeconomic theory. The two main parts of the course deal with questions of microeconomic decision theory (household and firm decisions) and questions of market theory (equilibria and efficiency on competitive markets). The last part of the lecture deals with problems of imperfect competition (oligopoly markets) as well as the basics of game theory and welfare economics.

Learning objectives:
The main aim of the course is to teach students the basics of thinking in microeconomic models. In particular, students should be able to analyze goods markets and the determinants of market outcomes. In detail, students will learn

- to name and define the basic microeconomic terms.
- to explain the interrelationships in microeconomic models.
- to calculate the important parameters of microeconomic models.
- to judge the possible effects of economic policy measures on the behavior of economic agents (in simple decision problems) and possibly propose alternative measures.
- to analyze as a participant in a tutorial simple microeconomic problems by solving written exercises and presenting the results of the exercises on the blackboard.
- to become familiar with the basic literature on microeconomics.

In this way, students acquire the necessary basic knowledge

- to recognize the structure of economic problems on a microeconomic level and develop proposals for solutions.
- to provide active decision support for simple economic decision problems.

Workload:
Total workload for 5 credit points: approx. 150 hours
Attendance: 45 hours
Self-study: 105 hours

Literature

- Varian, H. R. 2016. *Grundzüge der Mikroökonomik*. 9. Auflage. De Gruyter Oldenburg Verlag.
- Pindyck, R. S. und Rubinfeld, D. L. 2015. *Mikroökonomie*. 8. Auflage. Pearson.
- Frank, R. H. 2006. *Microeconomics and Behavior*. 6. Auflage. McGraw-Hill/Irwin.

T 3.146 Course: Economics II: Macroeconomics [T-WIWI-102709]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each summer term	1

Events					
ST 2025	2600014	Economics II: Macroeconomics	4 SWS	Lecture	Wigger
ST 2025	2660015	Economics II : Macroeconomics, Tutorial	2 SWS	Tutorial (	Schmelzer, Setio
Exams					
WT 24/25	7900197	Economics II: Macroeconomics			Ott
ST 2025	790vwl2	Economics II: Macroeconomics			Wigger

Assessment
Depending on further pandemic developments, the examination will be offered either as a 120-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites
None

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

V Economics II: Macroeconomics

2600014, SS 2025, 4 SWS, Language: German, Open in study portal

Lecture (V)

Content
Classical Theory of Macroeconomic Production
Chapter 1: Gross domestic product
Chapter 2: Money and Inflation
Chapter 3: Open Economy I
Chapter 4: Unemployment

Growth: The economy in the long term
Chapter 5: Growth I
Chapter 6: Growth II

Business cycle: The economy in the short term
Chapter 7: Economy and aggregate demand I
Chapter 8: Economy and aggregate demand II
Chapter 9: Open Economy II
Chapter 10: Macroeconomic supply

Advanced topics of macroeconomics
Chapter 11: Dynamic model of the economy as a whole
Chapter 12: Microeconomic foundations
Chapter 13: Macroeconomic economic policy

Learning goals:
The students. . .
- can name the basic indicators, technical terms and concepts of macroeconomics.
- can use models to reduce complex relationships to their basic components.
- can analyse economic policy debates and form their own opinion on them.

Workload:
Total effort for 5 credit points: approx. 150 hours
Presence time: 45 hours
Before and after the LV: 67.5 hours
Exam and exam preparation: 37.5 hours

Literature
Als Grundlage dieser Veranstaltung dient das bekannte Lehrbuch „Makroökonomik“ von Greg Mankiw vom Schäffer Poeschel Verlag in der aktuellen Fassung.

T 3.147 Course: Economics III: Introduction in Econometrics [T-WIWI-102736]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	see Annotations	2

Events					
ST 2025	2520016	Economics III: Introduction to Econometrics	2 SWS	Lecture / 🗣	Schienle, Bracher
ST 2025	2520017	Übungen zu VWL III	2 SWS	Practice	Schienle, Rüter, Bracher, Leimenstoll
Exams					
WT 24/25	7900002	Economics III: Introduction in Econometrics			Schienle
ST 2025	7900044	Economics III: Introduction in Econometrics			Schienle

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

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

Prerequisites
None

Additional Information
Please note that the course has been renamed and is now to be found under the new designation 'Introduction to Econometrics' with the identifier 'T-WIWI-114622'.

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

V Economics III: Introduction to Econometrics

2520016, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Learning objectives:

- Familiarity with the basic concepts and methods of econometrics
- Preparation of simple econometric surveys

Content:

- Simple and multiple linear regression (estimating parameters, confidence interval, testing, prognosis, testing assumptions)
- Model assessment

Requirements:

Knowledge of the lectures Statistics I + II is required.

Workload:

Total workload for 5 CP: approx. 150 hours

Attendance: 30 hours

Preparation and follow-up: 120 hours

Literature

Von Auer: Ökonometrie ISBN 3-540-00593-5

Goldberger: A course in Econometrics ISBN 0-674-17544-1

Gujarati. Basic Econometrics ISBN 0-07-113964-8

Schneeweiß: Ökonometrie ISBN 3-7908-0008-2

T 3.148 Course: Economics of Innovation [T-WIWI-112822]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2560236	Economics of Innovation	2 SWS	Lecture / 🗣	Ott
ST 2025	2560237	Exercises of Economics of Innovation	1 SWS	Practice / 🗣	Ott, Mirzoyan
Exams					
WT 24/25	7900077	Economics of Innovation			Ott
ST 2025	7900107	Economics of Innovation			Ott

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

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

Prerequisites
None

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.

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

V Economics of Innovation

2560236, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Learning objectives:

Students shall be given the ability to

- identify the importance of alternative incentive mechanisms for the emergence and dissemination of innovations
- understand the relationships between market structure and the development of innovation
- explain, in which situations market interventions by the state, for example taxes and subsidies, can be legitimized, and evaluate them in the light of economic welfare

Course content:

The course covers the following topics:

- Incentives for the emergence of innovations
- Patents
- Diffusion
- Impact of technological progress
- Innovation Policy

Recommendations:

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

Workload:

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

Exam description:

The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Students will be given the opportunity of writing and presenting a short paper during the lecture time to achieve a bonus on the exam grade. If the mandatory credit point exam is passed, the awarded bonus points will be added to the regular exam points. A deterioration is not possible by definition, and a grade does not necessarily improve, but is very likely to (not every additional point improves the total number of points, since a grade can not become better than 1). The voluntary elaboration of such a paper can not countervail a fail in the exam.

Literature
Auszug:

- Aghion, P., Howitt, P. (2009), The Economics of Growth, MIT Press, Cambridge MA.
- de la Fuente, A. (2000), Mathematical Methods and Models for Economists. Cambridge University Press, Cambridge, UK.
- Klodt, H. (1995), Grundlagen der Forschungs- und Technologiepolitik. Vahlen, München.
- Linde, R. (2000), Allokation, Wettbewerb, Verteilung - Theorie, UNIBUCH Verlag, Lüneburg.
- Ruttan, V. W. (2001), Technology, Growth, and Development. Oxford University Press, Oxford.
- Scotchmer, S. (2004), Incentives and Innovation, MIT Press.
- Tirole, Jean (1988), The Theory of Industrial Organization, MIT Press, Cambridge MA.

T 3.149 Course: Efficient Energy Systems and Electric Mobility [T-WIWI-102793]

Responsible: Prof. Dr. Patrick Jochem
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each summer term	1

Events					
ST 2025	2581006	Efficient Energy Systems and Electric Mobility	2 SWS	Lecture / 🗣	Jochem
Exams					
WT 24/25	7981006	Efficient Energy Systems and Electric Mobility			Fichtner
ST 2025	7981006	Efficient Energy Systems and Electric Mobility			Fichtner

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
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

Recommendations
None

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

V Efficient Energy Systems and Electric Mobility

2581006, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
This lecture series combines two of the most central topics in the field of energy economics at present, namely energy efficiency and electric mobility. The objective of the lecture is to provide an introduction and overview to these two subject areas, including theoretical as well as practical aspects, such as the technologies, political framework conditions and broader implications of these for national and international energy systems.

- Understand the concept of energy efficiency as applied to specific systems
- Obtain an overview of the current trends in energy efficiency
- Be able to determine and evaluate alternative methods of energy efficiency improvement
- Overview of technical and economical stylized facts on electric mobility
- Judging economical, ecological and social impacts through electric mobility

Organizational issues
Termine: 09.05., 23.05., 06.06., 27.06., 11.07., 25.07., 01.08.

Literature
Wird in der Vorlesung bekanntgegeben.

T 3.150 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2540454	eFinance: Information Systems for Securities Trading	2 SWS	Lecture / 🗣	Weinhardt
WT 24/25	2540455	Übungen zu eFinance: Information Systems for Securities Trading	1 SWS	Practice / 🗣	Motz, Motz
Exams					
WT 24/25	7900182	eFinance: Information Engineering and Management for Securities Trading			Weinhardt
ST 2025	7900269	eFinance: Information Systems for Securities Trading			Weinhardt

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

Assessment
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.

Additional Information
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.

Workload
135 hours

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

V eFinance: Information Systems for Securities Trading

2540454, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Literature

- Picot, Arnold, Christine Bortenlänger, Heiner Röhrl (1996): "Börsen im Wandel". Knapp, Frankfurt
- Harris, Larry (2003): "Trading and Exchanges - Market Microstructure for Practitioners"". Oxford University Press, New York

Weiterführende Literatur:

- Gomber, Peter (2000): "Elektronische Handelssysteme - Innovative Konzepte und Technologien". Physika Verlag, Heidelberg
- Schwartz, Robert A., Reto Francioni (2004): "Equity Markets in Action - The Fundamentals of Liquidity, Market Structure and Trading". Wiley, Hoboken, NJ

T 3.151 Course: Electric Energy Systems [T-ETIT-112850]

Responsible: Prof. Dr.-Ing. Marc Hiller
Prof. Dr.-Ing. Thomas Leibfried

Organisation: KIT Department of Electrical Engineering and Information Technology

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	6 CP	graded	Each summer term	1

Events					
ST 2025	2306200	Electric Energy Systems	2 SWS	Lecture / 🗣	Hiller, Leibfried
ST 2025	2306201	Practice to Electric Energy Systems	2 SWS	Practice / 🗣	Hiller, Leibfried
Exams					
ST 2025	7306200	Electric Energy Systems			Leibfried, Hiller

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

Prerequisites
none

T 3.152 Course: Electric Power Transmission & Grid Control [T-ETIT-110883]

Responsible: Prof. Dr.-Ing. Thomas Leibfried
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	6 CP	graded	Each summer term	1 terms	2

Events					
WT 24/25	2307376	Electric Power Transmission & Grid Control	2 SWS	Lecture / ✕	Leibfried
ST 2025	2307376	Electric Power Transmission & Grid Control	2 SWS	Lecture / 🗣	Leibfried
ST 2025	2307377	Tutorial for 2307376 Electric Power Transmission & Grid Control	2 SWS	Practice / 🗣	Weber
Exams					
ST 2025	7307376	Electric Power Transmission & Grid Control			Leibfried

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

Assessment
The examination takes place in form of a written examination lasting 120 minutes. The module grade is the grade of the written exam.

Prerequisites
none

T 3.153 Course: Electrical Engineering for Business Engineers, Part I [T-ETIT-100533]

Responsible: Dr. Wolfgang Menesklou
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	1

Events					
WT 24/25	2304223	Electrical Engineering for Business Engineers, Part I	2 SWS	Lecture / 🗣	Menesklou
WT 24/25	2304225	Electrical Engineering for Business Engineers, Part I (Exercise to 2304223)	2 SWS	Practice / 🗣	Menesklou
Exams					
WT 24/25	7304223	Electrical Engineering for Business Engineers, Part I			Menesklou
ST 2025	7304223	Electrical Engineering for Business Engineers, Part I			Menesklou

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

T 3.154 Course: Electrical Engineering for Business Engineers, Part II [T-ETIT-100534]

Responsible: Dr. Wolfgang Menesklou
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each summer term	1

Events					
ST 2025	2304224	Elektrotechnik II für Wirtschaftsingenieure	3 SWS	Lecture / 🗣	Menesklou
Exams					
WT 24/25	7304224	Electrical Engineering for Business Engineers, Part II			Menesklou
ST 2025	7304224	Electrical Engineering for Business Engineers, Part II			Menesklou

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

T 3.155 Course: Elements and Systems of Technical Logistics [T-MACH-102159]

Responsible: Georg Fischer
Dr.-Ing. Martin Mittwollen

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Assessment
The assessment consists of an oral exam (20min) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Prerequisites
none

Recommendations
Knowledge out of "Basics of Technical Logistics I" (T-MACH-109919) preconditioned.

Workload
120 hours

T 3.156 Course: Elements and Systems of Technical Logistics - Project [T-MACH-108946]

Responsible: Georg Fischer
Dr.-Ing. Martin Mittwollen

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	2 CP	graded	Each winter term	1

Assessment
Presentation of performed project and defense (30min) according to $4 (2), No. 3 of the examination regulation

Prerequisites
T-MACH-102159 (Elements and Systems of Technical Logistics) must have been started

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-MACH-102159 - Elements and Systems of Technical Logistics must have been started.

Recommendations
Knowledge out of "Basics of Technical Logistics I" (T-MACH-109919) preconditioned.

Workload
60 hours

T 3.157 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-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	see Annotations	2

Assessment
The examination will no longer be offered from summer semester 2025.

Prerequisites
None.

Additional Information
The course is no longer offered.

Workload
135 hours

T 3.158 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-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	see Annotations	2

Assessment
The examination will no longer be offered from summer semester 2025.

Prerequisites
None.

Additional Information
The course is no longer offered.

Workload
135 hours

T 3.159 Course: Emissions into the Environment [T-WIWI-102634]

Responsible: Ute Karl
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each winter term	1

Events					
WT 24/25	2581962	Emissions into the Environment	2 SWS	Lecture / 🗣	Karl
Exams					
WT 24/25	7981962	Emissions into the Environment			Schultmann
ST 2025	7981962	Emissions into the Environment			Schultmann

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
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.

Recommendations
None

Workload
105 hours

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

V Emissions into the Environment

2581962, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Emission sources/emission monitoring/emission reduction: The lecture gives an overview of relevant emissions of air pollutants and greenhouse gases, emission monitoring and pollutant abatement options together with relevant legal regulations at national and international level. In addition, the fundamentals of circular economy, waste management and recycling are explained.

Structure:

Air pollution control

- Introduction, terms and definitions
- Sources of air pollutants
- Legal framework of air quality control
- Technical measures to reduce air pollutant emissions

Circular economy, recycling and waste management

- Waste collection and logistics
- Dual systems for packaging waste
- Recycling
- Thermal and biological waste treatment
- Final waste disposal

Literature
Wird in der Veranstaltung bekannt gegeben.

T 3.160 Course: Employment Law [T-INFO-111436]

Responsible: Dr. Alexander Hoff
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each summer term	2

Events					
ST 2025	24668	Employment Law	2 SWS	Lecture / 🗣	Hoff
Exams					
WT 24/25	7500001	Employment Law			Sattler, Matz
ST 2025	7500082	Employment Law			Sattler

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

T 3.161 Course: Energy and Environment [T-WIWI-102650]

Responsible: Ute Karl
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each summer term	2

Events					
ST 2025	2581003	Energy and Environment	2 SWS	Lecture / 🗣	Karl
Exams					
WT 24/25	7900302	Energy and Environment NEW			Karl
WT 24/25	7981003	Energy and Environment			Fichtner
ST 2025	7900294	Energy and Environment NEW			Karl

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

Assessment
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.

Workload
105 hours

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

V Energy and Environment

2581003, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture focuses on the environmental impacts arising from fossil fuels use and on the methods for the evaluation of such impacts. The first part of the lecture describes the environmental impacts of air pollutants and greenhouse gases as well as technical measures for emission control. The second part covers methods of impact assessment and their use in environmental communication as well as methods for the scientific support of emission control strategies.

The topics include:

- Fundamentals of energy conversion
- Formation of air pollutants during combustion
- Technical measures to control emissions from fossil-fuel combustion processes
- External effects of energy supply (life cycle analyses of selected energy systems)
- Environmental communication on energy services (e.g. electricity labelling, carbon footprint)
- Integrated Assessment Modelling to support the European Clean Air Strategy
- Cost-effectiveness analyses and cost-benefit analyses for emission control strategies
- Monetary valuation of external effects (external costs)

Literature
Die Literaturhinweise sind in den Vorlesungsunterlagen enthalten (vgl. ILIAS)

T 3.162 Course: Energy and Process Technology I [T-MACH-102211]

Responsible: Prof. Dr.-Ing. Hans-Jörg Bauer
Prof. Dr. Ulrich Maas
Dr.-Ing. Corina Schwitzke
Dr. Amin Velji

Organisation: KIT Department of Mechanical Engineering

Institute of Thermal Turbomachinery

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	9 CP	graded	Each winter term	1

Events					
WT 24/25	2157961	Energy and Process Technology I	6 SWS	Lecture / Practice (/ 🗣	Bauer, Mitarbeiter, Wagner, Maas, Schwitzke, Wirbser, Reichel
Exams					
WT 24/25	76-T-MACH-102211	Energy and Process Technology I			Bauer, Wirbser, Schwitzke, Wagner
ST 2025	76-T-MACH-102211	Energy and Process Technology I			Bauer, Wirbser, Schwitzke, Pritz, Wagner

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

Assessment
The assessment consists of a written exam (120 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
none

Workload
270 hours

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

V Energy and Process Technology I

2157961, WS 24/25, 6 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
The last thrid of the lecture deals with the topic **Thermal Turbomachinery**. The basic principles, the functionality and the scope of application of gas and steam tubrines for the generation of electrical power and propulsion technology are addressed.

The students are able to:

- describe and calculate the basic physical-technical processes
- apply the mathematical and thermodynamical description
- reflect on and explain the diagrams and schematics
- comment on diagrams
- explain the functionality of gas and steam turbines and their components
- name the applications of thermal turbomachinery and their role in the field of electricity generation and propulsion technology

T 3.163 Course: Energy and Process Technology II [T-MACH-102212]

Responsible: Prof. Dr. Ulrich Maas
Dr.-Ing. Corina Schwitzke

Organisation: KIT Department of Mechanical Engineering

Institute of Thermal Turbomachinery

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	9 CP	graded	Each summer term	1

Events					
ST 2025	2170832	Energy and Process Technology II	6 SWS	Lecture / Practice (/ 🗣	Schwitzke, Pritz, Maas, Wirbser, Schmid
Exams					
WT 24/25	76-T-MACH-102212	Energy and Process Technology II			Schwitzke, Wirbser, Bauer, Wagner
ST 2025	76-T-MACH-102212	Energy and Process Technology II			Wirbser, Schwitzke, Bauer, Pritz, Wagner

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

Assessment
The assessment consists of a written exam (120 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
none

Workload
270 hours

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

V Energy and Process Technology II

2170832, SS 2025, 6 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
Thermal Turbomaschinery - In the first part of the lecture deals with energy systems. Questions regarding global energy resources and their use, especially for the generation and provision of electrical energy, are addressed. Common fossile and nuclear power plants for the centralized supply with electrical power as well as concepts of power-heat cogeneration for the decentralized electrical power supply by means of block-unit heat and power plants, etc. are discussed. Moreover, the characteristics and the potential of renewable energy conversion concepts, such as wind and hydro-power, photovoltaics, solar heat, geothermal energy and fuel cells are compare and evaluated. The focus is on the description of the potentials, the risks and the economic feasibility of the different strategies aimed to protect resources and reduce CO2 emissions.

The students are able to:

- discuss and evaluate energy resources and reserves and their utility
- review the use of energy carriers for electrical power generation
- explain the concepts and properties of power-heat cogeneration, renewable energy conversion and fuel cells and their fields of application
- comment on and compare centralized and decentralized supply concepts
- calculate the potentials, riskis and economic feasibility of different strategies aiming at the protection of resources and the reduction of CO2 emissions
- name and judge on the options for solar energy utilization
- discuss the potential of geothermal energy and its utilization

T 3.164 Course: Energy Conversion and Increased Efficiency in Internal Combustion Engines [T-MACH-105564]

Responsible: Prof. Dr. Thomas Koch
Dr.-Ing. Heiko Kubach

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Exams			
WT 24/25	76-T-MACH-105564	Energy Conversion and Increased Efficiency in Internal Combustion Engines	Koch
ST 2025	76-T-MACH-105564	Hydrogen and reFuels - Energy Conversion in Combustion Engines	Koch

Assessment
oral exam, 25 minutes, no auxillary means

Prerequisites
none

T 3.165 Course: Energy Efficient Intralogistic Systems [T-MACH-105151]

Responsible: Dr.-Ing. Meike Kramer
Dr. Frank Schönung

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2117500	Energy efficient intralogistic systems	2 SWS	Lecture / 🗣	Kramer, Schönung
Exams					
WT 24/25	76-T-MACH-105151	Energy Efficient Intralogistic Systems			Kramer

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

Assessment
Oral, 30 min. examination dates after the end of each lesson period.

Prerequisites
none

Recommendations
The content of course “Basics of Technical Logistics I” (T-MACH-109919) should be known.

Additional Information
Visit the IFL homepage of the course for the course dates and/or possible limitations of course participation.

Workload
120 hours

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

V Energy efficient intralogistic systems

2117500, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The content of course “Basics of Technical Logistics” should be knownn.

Literature
Keine.

T 3.166 Course: Energy Market Engineering [T-WIWI-107501]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2540464	Energy Market Engineering	2 SWS	Lecture /	Weinhardt, Miskiw
ST 2025	2540465	Übung zu Energy Market Engineering	1 SWS	Practice /	Semmelmann
Exams					
WT 24/25	7900127	Energy Market Engineering			Weinhardt
ST 2025	79852	Energy Market Engineering			Weinhardt

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

Assessment
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

Recommendations
None

Additional Information
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 2025, 2 SWS, Language: German, Open in study portal

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

Content
The lecture "Energy Market Engineering" addresses the design and analysis of energy markets considering current developments and challenges. A particular focus is on the integration of renewable energies and the associated market mechanisms and regulations.

Specifically, the following topics are covered:

- **Introduction to Market Engineering**: What design elements do markets and specifically auctions have in general, and what influence does this have on participant behavior.
- **Introduction to Energy Markets**: Fundamentals and current trends in the energy system, including climate change and the expansion of renewable energies.
- **Market Design and Products**: Various pricing models such as nodal pricing, zonal pricing, and the structure of capacity markets.
- **Grid Expansion, Distribution Networks, and Flexibility Markets**: Analysis of distribution network markets and the role of flexibility options like demand response and storage technologies.
- **Intermittent Generation and Grid Stability**: Challenges posed by fluctuating renewable energies and strategies to ensure grid stability.
- **Digitalization and Market Transparency**: The role of digitalization in improving market transparency and efficiency, including the use of smart metering systems and data-driven approaches.
- **Current Research Projects and Developments**: Presentation of ongoing research projects and their significance for the future design of energy markets.

Organizational issues
Die Vorlesung findet hybrid statt, mit Videos die während des Semester von den Studierenden eigenständig durchgearbeitet werden und einer Blockveranstaltung im Juli, welche die Vorlesungsinhalte anreichert und vertieft. Mehr Infos in der Auftaktverantsaltung in Präsenz in der ersten Vorlesungswoche.

Literature

- Erdmann G, Zweifel P. *Energieökonomik, Theorie und Anwendungen*. Berlin Heidelberg: Springer; 2007.
- Grimm V, Ockenfels A, Zoettl G. Strommarktdesign: Zur Ausgestaltung der Auktionsregeln an der EEX *. *Zeitschrift für Energiewirtschaft*. 2008:147-161.
- Stoft S. *Power System Economics: Designing Markets for Electricity*. IEEE; 2002.,
- Ströbele W, Pfaffenberger W, Heuterkes M. *Energiewirtschaft: Einführung in Theorie und Politik*. 2nd ed. München: Oldenbourg Verlag; 2010:349.

T 3.167 Course: Energy Networks and Regulation [T-WIWI-107503]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Oral examination	4,5 CP	graded	Each winter term	2

Events					
WT 24/25	2540494	Energy Networks and Regulation	2 SWS	Lecture / 🗣	Rogat, Miskiw
WT 24/25	2540495	Übung zu Energy Networks and Regulation	1 SWS	Practice / 🗣	Rogat, Miskiw
Exams					
WT 24/25	7900198	Energy Networks and Regulation			Weinhardt

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

Assessment
Success is assessed in the form of an oral examination (in accordance with §4(2), 1 SPO).
The examination is offered in the semester of the lecture.

Prerequisites
None

Recommendations
None

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

V Energy Networks and Regulation

2540494, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

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

Linnemann, M. (2024). Energiewirtschaft für (Quer-)Einsteiger: Einmaleins der Stromwirtschaft. Deutschland: Springer Fachmedien Wiesbaden.

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 3.168 Course: Energy Policy [T-WIWI-102607]

Responsible: Prof. Dr. Martin Wietschel
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each summer term	3

Events					
ST 2025	2581959	Energy Policy	2 SWS	Lecture / 🗣	Wietschel
Exams					
WT 24/25	7981959	Energy Policy			Fichtner
ST 2025	7981959	Energy Policy			Fichtner

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

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

Prerequisites
None.

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

V Energy Policy

2581959, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The availability of cheap, environmentally friendly and secure energy is crucial for human welfare. However, the increasing scarcity of resources and increasing environmental pressures, with a particular focus on climate change, threaten human welfare through economic action. Energy contributes significantly to environmental pollution. The energy industry is characterised by high regulation and a significant influence of political decisions.

At the beginning of the lecture different perspectives on energy policy will be presented and the analysis of political decision-making processes will be discussed. Then the current energy policy challenges in the area of environmental pollution, regulation and the role of energy for households and industry will be discussed. Then the actors of energy policy and energy responsibilities in Europe will be discussed. The economic approaches from traditional environmental economics and sustainability as a new policy approach will then be discussed. Finally, energy policy instruments such as the promotion of renewable energies or energy efficiency are discussed in detail and how they can be evaluated.

The lecture emphasizes the relationship between theory and practice and presents some case studies.

Literature
Wird in der Vorlesung bekannt gegeben.

T 3.169 Course: Energy Trading and Risk Management [T-WIWI-112151]

Responsible: N.N.
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each summer term	2

Events					
ST 2025	2581020	Energy Trading and Risk Management	2 SWS	Lecture / 🗣	Kraft, Fichtner, Beranek
Exams					
WT 24/25	7981020	Energy Trading and Risk Management			Fichtner
ST 2025	7981020	Energy Trade and Risk Management			Fichtner

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

Assessment
The lecture "Energiehandel und Risikomanagement" will be held in English under the title "Energy Trading and Risk Management" from the summer semester 2022. The examination for the English-language lecture will be offered in English from the summer semester 2022.
The assessment consists of a written exam (60 minutes). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment).

Prerequisites
None

Recommendations
None

Workload
105 hours

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

V Energy Trading and Risk Management

2581020, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content

1. Introduction to Markets, Mechanisms and Interaction
2. Electricity Trading (platforms, products, mechanisms)
3. Balancing Energy Markets and Congestion Management
4. Coal Markets (reserves, supply, demand, and transport)
5. Investments and Capacity Markets
6. Oil and Gas Markets (supply, demand, trade, and players)
7. Trading Game
8. Risk Management in Energy Trading

Organizational issues
Termine 14-täglich nach Vereinbarung

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 3.170 Course: Engine Measurement Techniques [T-MACH-105169]

Responsible: Dr.-Ing. Sören Bernhardt
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2134137	Engine measurement techniques	2 SWS	Lecture / 🗣	Bernhardt
Exams					
ST 2025	76-T-MACH-105169	Engine Measurement Techniques			Koch

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

Assessment
oral examination, Duration: 0,5 hours, no auxiliary means

Prerequisites
none

Recommendations
T-MACH-102194 Combustion Engines I

Additional Information
The course is offered in German.

Workload
120 hours

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

V Engine measurement techniques

2134137, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Literature

1. Grohe, H.:Messen an Verbrennungsmotoren
2. Bosch: Handbuch Kraftfahrzeugtechnik
3. Veröffentlichungen von Firmen aus der Meßtechnik
4. Hoffmann, Handbuch der Meßtechnik
5. Klingenberg, Automobil-Meßtechnik, Band C

T 3.171 Course: Engineering FinTech Solutions [T-WIWI-106193]

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	9 CP	graded	Each term	5

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

Workload
270 hours

T 3.172 Course: Engineering Hydrology [T-BGU-108943]

Responsible: PD Dr.-Ing. Uwe Ehret
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	3 CP	graded	Each term	1 terms	2

Events					
ST 2025	6200617	Engineering Hydrology	2 SWS	Lecture / Practice (/	Ehret
Exams					
WT 24/25	8230108943	Engineering Hydrology			Ehret
ST 2025	8230108943	Engineering Hydrology			Ehret

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

Assessment
written exam, 60 min.

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
90 hours

T 3.173 Course: Engineering Interactive Systems: AI & Wearables [T-WIWI-113460]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2540420	Engineering Interactive Systems: AI & Wearables	3 SWS	Lecture /	Mädche
Exams					
WT 24/25	7900195	Engineering Interactive Systems: AI & Wearables			Mädche

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

Assessment
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

Recommendations
None

Additional Information
The course is held in English.

Workload
135 hours

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

V Engineering Interactive Systems: AI & Wearables

2540420, WS 24/25, 3 SWS, Language: English, Open in study portal

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

Literature
Siehe Englische Literatur

T 3.174 Course: Enterprise Risk Management [T-WIWI-102608]

Responsible: Prof. Dr. Ute Werner
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Oral examination	4,5 CP	graded	Each winter term	1

Assessment
The assessment consists of oral presentations (incl. papers) within the lecture (according to Section 4 (2), 3 of the examination regulation) and a final oral exam (according to Section 4 (2), 2 of the examination regulation).

The overall grade consists of the assessment of the oral presentations incl. term papers (50 percent) and the assessment of the oral exam (50 percent).

The examination will be offered latest until winter term 2017/2018 (beginners only).

Prerequisites
None

Recommendations
None

T 3.175 Course: Enterprise Systems for Financial Accounting & Controlling [T-WIWI-113746]

Responsible: Christian Fleig
Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2500060	Enterprise Systems for Financial Accounting & Controlling	3 SWS	Lecture / 🗣	Mädche, Fleig
Exams					
WT 24/25	7900074	Enterprise Systems for Financial Accounting & Controlling			Mädche

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

Assessment
Success is assessed in the form of an alternative exam assessment. It consists of a one-hour exam and the implementation of a capstone project.

The final grade is made up of 60% of the exam grade and 40% of the capstone project grade.

Details on the structure of the assessment will be announced during the lecture.

Prerequisites
Keine.

Workload
135 hours

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

V Enterprise Systems for Financial Accounting & Controlling

2500060, WS 24/25, 3 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Enterprise Systems building on enterprise resource planning (ERP) packaged software such as SAP S/4HANA are information systems that target large-scale integration of business processes and data across a company's functional areas. These systems are crucial for financial accounting and controlling as they enable organizations to streamline and integrate their financial operations, ensuring accurate decision-making based on real-time financial data. Contemporary packaged ERP software provide modules that integrate core business processes in financial accounting including general ledger, accounts receivable, payable and asset accounting. The information generated in these processes serves as a major source of cost-related decision-making, reporting and data analyses in internal accounting ("controlling"). Packaged ERP software typically rely on industry best practices captured in the form of product software with a standardized structure of master data. Thereby, they also support regulatory compliance and analyzability of processes in approaches such as process mining which enhances overall business efficiency and competitiveness. However, implementing enterprise systems in practice imposes substantial challenges to organizations.

First, the B.Sc. lecture "Enterprise Systems for Financial Accounting & Controlling" introduces fundamental business processes and concepts in finance and controlling and explains how these processes are implemented in packaged ERP software such as SAP S/4HANA. Students learn the basic and most important terms and master data structures in the SAP FI/CO module. Second, students learn about the principles of packaged ERP software, gaining hands-on experience SAP S4/HANA. Third, the lecture introduces the challenges in enterprise system projects such as SAP S/4HANA implementations, Fourth, students actively apply their knowledge in collaborative team efforts when working with exemplary SAP data in Microsoft SQL Server to analyze finance and controlling master data processes (capstone project)

Learning Objectives:

The students …

- understand modern business concepts of financial accounting & controlling for large enterprises
- the importance of enterprise systems supporting the implemention of modern business concepts
- know the underlying principles of packaged software for enterprise resource planning and process intelligence
- Understand the opportunities and challenges of Enterprise Systems implementation at large enterprises
- Get hands-on knowledge about financial accounting & controlling with commercial product software (e.g., SAP S4/HANA)
- Apply their knowledge on enterprise systems implementation for financial accounting and controlling on real-world data in team effort

T 3.176 Course: Entrepreneurship [T-WIWI-102864]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each term	1

Events					
WT 24/25	2545001	Entrepreneurship	2 SWS	Lecture / 🏵	Terzidis, Dang
ST 2025	2545001	Entrepreneurship	2 SWS	Lecture / 🏵	Terzidis, Dang
Exams					
WT 24/25	7900045	Entrepreneurship			Terzidis
WT 24/25	7900229	Entrepreneurship			Terzidis
ST 2025	7900002	Entrepreneurship			Terzidis

Legend: 🖳 Online, 🏵 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
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

Recommendations
None

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

V Entrepreneurship

2545001, WS 24/25, 2 SWS, Language: English, Open in study portal

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

Content
The lecture as an obligatory part of the module "Entrepreneurship" introduces the basic concepts of entrepreneurship. Important concepts and empirical facts are presented that relate to the conception and implementation of newly founded companies.

The focus here is on the introduction to methods for generating innovative business ideas, for transferring patents into business concepts and general principles of business modelling and business planning. In particular approaches such as Lean Startup and Effectuation as well as concepts for the financing of young enterprises are treated.

A "KIT Entrepreneurship Talk" is part of each session, in which experienced founder and entrepreneur personalities report on their experiences in practice of the establishment of an enterprise. Dates and speakers will be announced on the EnTechnon homepage.

Learning objectives:

The studentsare introduced to the topic Entrepreneurship. After successful attendance of the meeting they are to have an overview of the subranges of the Entrepreneurships and be able to understand basic concepts of the Entrepreneurships and apply key concepts.

Workload:

Total effort with 3 credit points: approx. 90 hours
Presence time: 30 hours
Pre- and postprocessing of the LV: 45.0 hours
Exam and exam preparation: 15.0 hours

Examination:

The assessment of success takes place in the form of a written examination (60 min.) (according to §4(2), 1 SPO). The grade is the grade of the written exam.

A grade bonus can be earned through successful participation in a case study in the Entrepreneurship lecture. If the grade of the written exam is between 4.0 and 1.3, the bonus improves the grade by up to 0.3 or 0.4.The bonus only applies if you have passed the exam with at least a 4.0. More details will be provided in the lecture. Participation in the case study is voluntary.

Exam date: tba

Organizational issues
VL findet jeweils Mo, 15:45 - 19:00 an folgenden Terminen statt:
21.10.2024
28.10.2024
04.11.2024
11.11.2024
18.11.2024
25.11.2024
02.12.2024
09.12.2024 (Prep Session 13:30 - 14:30)

Literature
Aulet, Bill (2013): Disciplined Entrepreneurship. 24 Steps to a Successful Startup. Hoboken: Wiley.

R.C. Dorf, T.H. Byers: Technology Ventures – From Idea to Enterprise., (McGraw Hill 2008)

Füglistaller, Urs, Müller, Christoph and Volery, Thierry (2008): Entrepreneurship

Hisrich, Robert D.; Ramadani, Veland (2017): Effective entrepreneurial management. Strategy, planning, risk management, and organization. Cham, Switzerland: Springer.

Ries, Eric (2011): The Lean Startup.

Osterwalder, Alexander (2010): Business Model Generation.

V **Entrepreneurship**
2545001, SS 2025, 2 SWS, Language: English, Open in study portal
Lecture (V)
Blended (On-Site/Online)

Content
The lecture as a compulsory part of the module "Entrepreneurship" introduces the basic concepts of entrepreneurship. Important concepts and empirical facts are introduced, which relate to the conception and implementation of newly founded companies.

The focus here is on introducing methods for generating innovative business ideas, translating patents into business concepts, and general principles of business modeling and business planning. In particular, approaches such as Lean-Startup and Effectuation as well as concepts for financing young companies are covered.

A "KIT Entrepreneurship Talk" is part of each session, in which experienced founder and entrepreneur personalities report on their experiences in the practice of the establishment of an enterprise. Dates and speakers will be announced on the EnTechnon homepage.

Learning objectives:

The students will be introduced to the topic of entrepreneurship. After successful attendance of the course they should have an overview of the sub-areas of entrepreneurship and be able to understand basic concepts of entrepreneurship and apply key concepts.

Workload:

The total effort with 3 credit points: approx. 90 hours
Presence time: 30 hours
Pre- and postprocessing of the LV: 45.0 hours
Exam and exam preparation: 15.0 hours

Examination:

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation)

A grade bonus can be earned by successfully participating in a case study as part of the Entrepreneurship lecture. If the grade of the written exam is between 4.0 and 1.3, the bonus improves the grade by up to 0.3 or 0.4. The bonus only applies if you have passed the exam with at least a 4.0. More details will be provided in the lecture. Participation in the case study is voluntary.

Exam dates: tbd

Organizational issues
VL findet jeweils Di, 15:45 - 19:00 an folgenden Terminen statt:

22.04.2025
29.04.2025
06.05.2025
13.05.2025
20.05.2025
27.05.2025
03.06.2025 (inkl. Prep Session)

17.06.2025 (Klausur)

Literature
Füglistaller, Urs, Müller, Christoph und Volery, Thierry (2008): Entrepreneurship

Ries, Eric (2011): The Lean Startup

Osterwalder, Alexander (2010): Business Model Generation

Aulet, Bill (2013): Disciplined Entrepreneurship. 24 Steps to a Successful Startup. Hoboken: Wiley.

R.C. Dorf, T.H. Byers: Technology Ventures – From Idea to Enterprise., (McGraw Hill 2008)

Hisrich, Robert D.; Ramadani, Veland (2017): Effective entrepreneurial management. Strategy, planning, risk management, and organization. Cham, Switzerland: Springer.

T 3.177 Course: Entrepreneurship Research [T-WIWI-102894]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each summer term	1

Events					
ST 2025	2545002	Entrepreneurship Research	2 SWS	Seminar / 🗣	Malik
Exams					
ST 2025	7900052	Entrepreneurship Research			Terzidis

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

Assessment
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

Recommendations
None

Additional Information
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 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
Content

In this course, the students choose from various relevant and current research topics in entrepreneurship and independently develop a topic that suits them in small teams. Initially, there is an introduction to standard methods such as systematic literature review, design science, qualitative and quantitative data analysis, and more. The seminar topic must be scientifically prepared and presented in 15-20 pages as part of a written elaboration. The seminar results are presented in a block event at the end of the semester (20 min + 10 min open discussion).

Learning Objectives

The foundations of independent scholarly work (literature review, argumentation + discussion, citation of literature sources, application of qualitative, quantitative, and simulation methods) are developed as part of the written elaboration. The competencies acquired in the seminar can be utilized in preparing for a potential master's thesis. Therefore, the seminar is mainly aimed at students who intend to write their thesis at the Chair of Entrepreneurship and Technology Management and wish to gain substantial experience in entrepreneurship research.

Organizational issues
Thursday, 08.05.2025, 10.00-16.00
Thursday, 05.06.2025, 10.00-16.00
Thursday, 10.07.2025, 09.00-12.00

Registration is via the Wiwi-Portal.

Literature
Will be announced in the seminar.

T 3.178 Course: Entrepreneurship Seasonal School [T-WIWI-113151]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Irregular	1

Events					
WT 24/25	2500215	Entrepreneurship Seasonal School	2 SWS	Block / 🗣	Weimar, Martjan
Exams					
WT 24/25	7900146	Entrepreneurship Seasonal School			Terzidis

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

Assessment
Alternative exam assessment. The grade is composed of the presentation and the written elaboration. Details on the design of the examination will be announced in the course.

Prerequisites
The Seasonal School is intended for advanced bachelor's and all master's students (all disciplines). Participation in the selection process is a prerequisite.

Recommendations
Basic knowledge of business administration, attendance of the lecture Entrepreneurship as well as openness and interest in intercultural exchange are recommended. Solid knowledge of the English language is an advantage.

Additional Information
Entrepreneurship Seasonal School

Workload
90 hours

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

V **Entrepreneurship Seasonal School** — **Block (B) On-Site**
2500215, WS 24/25, 2 SWS, Language: English, Open in study portal

Content
During the Entrepreneurship Seasonal School, students develop a business model based on innovative technologies and social problems in workshops in international teams for one week.

Course Content:

The Entrepreneurship Seasonal School brings together students from different universities to spend a week strengthening their knowledge of digital entrepreneurship in healthcare. Experience the life of an entrepreneur and learn how to attain resources to realize a product vision. During one week, you will develop a range of entrepreneurial competences crucial for establishing a successful venture. Our primary focus is on digital healthcare ventures, granting you the opportunity to delve into the realm of entrepreneurship within the healthcare system. By gaining a deep understanding of healthcare needs, you will utilize creativity techniques to uncover potential business ideas that provide value for patients and doctors. Additionally, you will learn how to create viable business models, dive into health regulations, and pitch your idea to a jury.

In WS 2023/24 the one-week program is being hosted by the Karlsruhe Institute of Technology, with co-teaching support from the Eucor partners University of Basel and the University of Strasbourg.

In the seminar you will work on a project in teams of max. 5 persons.

Learning Objectives:

After attending the event, you will be able to...

- describe the role of entrepreneurship
- develop innovative and technology-based solutions for societal problems,
- develop a viable business model for a problem,
- present a business idea to a panel of judges,
- and be empowered to work independently in multidisciplinary and multicultural teams

Organizational issues
Expected date: 17.02.25 – 21.02.25, Details will be announced later. Registration via wiwi portal.

T 3.179 Course: Environmental and Resource Policy [T-WIWI-102616]

Responsible: Rainer Walz
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2560548	Environmental and Ressource Policy	2 SWS	Lecture / Practice (	Walz
Exams					
WT 24/25	7900252	Environmental and Resource Policy			Walz
ST 2025	7900277	Environmental and Resource Policy			Mitusch, Walz

Assessment
See German version

Recommendations
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 2025, 2 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)

Literature
Weiterführende Literatur:

Michaelis, P.: Ökonomische Instrumente in der Umweltpolitik. Eine anwendungsorientierte Einführung, Heidelberg
OECD: Environmental Performance Review Germany, Paris

T 3.180 Course: Environmental Economics and Sustainability [T-WIWI-102615]

Responsible: Prof. Dr. Rainer Walz
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	2

Events					
WT 24/25	2521547	Umweltökonomik und Nachhaltigkeit (mit Übung)	2 SWS	Lecture / Practice (	Walz
Exams					
WT 24/25	7900250	Environmental Economics and Sustainability			Walz
ST 2025	7900273	Environmental Economics and Sustainability			Mitusch

Assessment
See German version

Prerequisites
None

Recommendations
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].

Workload
90 hours

T 3.181 Course: Environmental Law [T-BGU-111102]

Responsible: Dr. Ulrich Smeddinck
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	3 CP	graded	Each winter term	1 terms	1

Events					
WT 24/25	6111177	Environmental Law	2 SWS	Lecture / 🗣	Smeddinck
Exams					
WT 24/25	8262111102_1	Environmental Law			Smeddinck
WT 24/25	8262111102_2	Environmental Law			Smeddinck

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

Assessment
Written exam with 120 min

Prerequisites
None

Additional Information
None

Workload
90 hours

T 3.182 Course: European and International Law [T-INFO-101312]

Responsible: Ulf Brühann
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each summer term	1

Events					
ST 2025	24666	Europäisches und Internationales Recht	2 SWS	Lecture / 🗣	Brühann
Exams					
WT 24/25	7500048	European and International Law			Zufall
ST 2025	7500084	European and International Law			Zufall

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

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

V Europäisches und Internationales Recht

24666, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The course will be held in German.

The total workload for this course unit is 90 hours for 3 credit points, of which 22.5 hours are spent in attendance.

Organizational issues
Die drei folgenden Blockveranstaltungen finden jeweils im Seminarraum Nr. 313 (Geb. 07.08) statt:

Montag, den 28.04.2025, 09:30 - 17:00 (Mittagspause wird flexibel gehalten)

Montag, den 02.06.2025, 09:30 - 17:00 (Mittagspause wird flexibel gehalten)

Montag, den 07.07.2025, 09:30 - 17:00 Uhr (Mittagspause wird flexibel gehalten).

Literature
Literatur wird in der Vorlesung angegeben.

Weiterführende Literatur

Erweiterte Literaturangaben werden in der Vorlesung bekannt gegeben.

T 3.183 Course: Exam on Climatology [T-PHYS-105594]

Responsible: Prof. Dr. Joaquim José Ginete Werner Pinto
Organisation: KIT Department of Physics
Part of: M-WIWI-104904 - Natural Sciences

Type	Credits	Grading	Version
Oral examination	1 CP	graded	5

Exams			
ST 2025	7800052	Exam on Climatology as Minor Subject	Ginete Werner Pinto
ST 2025	7800139	Climatology reexam	Ginete Werner Pinto

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-PHYS-101092 - Climatology must have been passed.

T 3.184 Course: Examination Prerequisite Project Management [T-BGU-113454]

Responsible: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Coursework	0 CP	pass/fail	Each winter term	1 terms	1

Events					
WT 24/25	6200106	Project Management	2 SWS	Lecture / Practice (/	Haghsheno, Schneider, John, Gloser
Exams					
WT 24/25	8231113454	Examination Prerequisite Project Management			Haghsheno, Schneider

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

Assessment
4 online tests during the course with 20 questions und 20 min. duration each

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
5 hours

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

V Project Management

6200106, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
This course provides a comprehensive introduction to (construction) project management. It takes a closer look at the organisation and delivery of a construction project from the client's perspective. In this context, a range of competences are presented that should be on hand for the successful execution of project management. In addition, we present a selection of project management methods for individual competences and illustrate them with case studies.

Organizational issues
Vorlesungen: Mittwochs vom 23.10.2024 bis 12.02.2025, jeweils 09:45 – 11:15 Uhr (hybrid)

Übungen: Asynchron ab 13.11.2024, 04.12.2024, 08.01.2025, 05.02.2025 (online)

Literature

- AHRENS, Hannsjörg; BASTIAN, Klemens; MUCHOWSKI, Lucian (Hrsg.) (2021) *Handbuch Projektsteuerung - Baumanagement: Ein praxisorientierter Leitfaden mit zahlreichen Hilfsmitteln und Arbeitsunterlagen*, 6. Auflage, Fraunhofer IRB Verlag, Stuttgart
- GPM Deutsche Gesellschaft für Projektmanagement e. V. (Hrsg.) (2017) *Individual Competence Baseline für Projektmanagement (Version 4.0)*, 1. Auflage, GPM Deutsche Gesellschaft für Projektmanagement e. V., Nürnberg
- HAGHSHENO, Shervin; JOHN, Paul Christian (2024) *Bauherrnseitige Projektmanagement-Dienstleistungen in Deutschland*, Forschungsbericht, DVP – Deutscher Verband für Projektmanagement in der Bau- und Immobilienwirtschaft e. V.
- KOCHENDÖRFER, Bernd; LIEBCHEN, Jens H.; VIERING, Markus G. (2021) *Bau-Projekt-Management: Grundlagen und Vorgehensweisen*, 6. Auflage, Springer Vieweg, Wiesbaden
- SCHULZ, Markus (2020) *Projektmanagement: Zielgerichtet. Effizient. Klar.*, 2. Auflage, UVK Verlag, Tübingen

T 3.185 Course: Exercise Transportation Data Analysis [T-BGU-113971]

Responsible: Prof. Dr.-Ing. Peter Vortisch
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Coursework	0 CP	pass/fail	Each summer term	1 terms	1

Events					
ST 2025	6232802	Traffic Management and Telematics	2 SWS	Lecture / Practice (/	Vortisch
Exams					
ST 2025	8245113971	Exercise Transportation Data Analysis			Vortisch

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

Assessment
programming exercise with Python

Prerequisites
none

Recommendations
none

Additional Information
will be offered newly as examination prerequisite as from summer term 2025

Workload
10 hours

T 3.186 Course: Exercise Transportation Data Analysis [T-BGU-113671]

Responsible: PD Dr.-Ing. Martin Kagerbauer
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Coursework	0 CP	pass/fail	Each winter term	1 terms	1

Events					
WT 24/25	6232901	Empirical Data in Transportation	2 SWS	Lecture / Practice (/	Kagerbauer
Exams					
WT 24/25	8245113671	Exercise Transportation Data Analysis			Kagerbauer

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

Assessment
Exercise to qualitative and quantitative analyses of travel surveys, appr. 2 pages

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
10 hours

T 3.187 Course: Exercises in Civil Law [T-INFO-102013]

Responsible: Dr. Yvonne Matz
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Examination of another type	9 CP	graded	Each term	3

Events					
WT 24/25	2424011	Commercial and Corporate Law	2 SWS	Lecture / 🗣	Danek
WT 24/25	2424017	Exercises in Civil Law	2 SWS	Lecture / 🗣	Sattler
ST 2025	24504	Advanced Civil Law	2 SWS	Lecture / 🗣	Matz
ST 2025	24506	Exercises in Civil Law	2 SWS	Lecture / 🗣	Sattler, Bosbach
ST 2025	24926	Case Studies in Civil Law	2 SWS	Practice / 🗣	Bosbach, Scheiermann
Exams					
WT 24/25	7500108	Commercial Law			Sattler
ST 2025	7500093	Wirtschaftsprivatrecht			Sattler

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

Prerequisites
None.

T 3.188 Course: Experimental Design [T-WIWI-111395]

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	4,5 CP	graded	Each term	1 terms	1

Events					
WT 24/25	2500050	Experimental Design	3 SWS	Others (sons / 🗣	Seidler
Exams					
WT 24/25	7900292	Experimental Design			Scheibehenne
WT 24/25	7900334	Experimental Design			Scheibehenne

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

Assessment
Alternative exam assessment. Details will be announced at the beginning of the course.

Additional Information
The course provides an overview of important methods of empirical research. Students learn basic theories and methods that are relevant in planning, conducting and evaluating experiments. They learn to analyze, critique, and independently develop experimental designs. The course covers, for example, the development of a research question, formulation of scientific hypotheses, sample selection, calculation of statistical power, the difference between correlative and causal relationships, and the relevance of experimental research to test the latter.

Exemplary studies from decision research are analyzed and discussed with respect to experimental design.

The workload of the course is 4.5 ECTS. This consists of exercises, smaller presentations by the students during the semester, as well as the preparation of the examination at the end of the semester.

The number of participants is limited. Places are allocated via the Wiwi-Portal. Course language is German.

Workload
135 hours

T 3.189 Course: Experimental Economics [T-WIWI-102614]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2540489	Experimental Economics	2 SWS	Lecture / 🗣	Knierim
WT 24/25	2540493	Übung zu Experimental Economics	1 SWS	Practice / 🗣	del Puppo
Exams					
WT 24/25	7900096	Experimental Economics			Weinhardt
ST 2025	7900258	Experimental Economics			Weinhardt

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

Assessment
The assessment consists of a written exam (60 min).

Prerequisites
None

Additional Information
The lecture will be taught in English.

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

V Experimental Economics

2540489, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Literature

- Strategische Spiele; S. Berninghaus, K.-M. Ehrhart, W. Güth; Springer Verlag, 2. Aufl. 2006.
- Handbook of Experimental Economics; J. Kagel, A. Roth; Princeton University Press, 1995.
- Experiments in Economics; J.D. Hey; Blackwell Publishers, 1991.
- Experimental Economics; D.D. Davis, C.A. Holt; Princeton University Press, 1993.
- Experimental Methods: A Primer for Economists; D. Friedman, S. Sunder; Cambridge University Press, 1994.

T 3.190 Course: Experimental Lab Class in Welding Technology, in Groups [T-MACH-102099]

Responsible: Dr.-Ing. Stefan Dietrich
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework	4 CP	pass/fail	Each winter term	3

Events					
WT 24/25	2173560	Welding Lab Course, in groupes	3 SWS	Practical course / 🗣	Dietrich, Schulze
Exams					
WT 24/25	76-T-MACH-102099	Experimental Lab Class in Welding Technology, in Groups			Dietrich

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

Assessment
Lab Course Report

Additional Information
The course is offered in German.

The lab takes place at the beginning of the winter semester break once a year. The registration is possible during the lecture period via iam-wk-lehre@iam.kit.edu at the IAM – WK. The lab is carried out in the Handwerkskammer Karlsruhe.

You need sturdy shoes and long clothes!

Workload
120 hours

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

V Welding Lab Course, in groupes

2173560, WS 24/25, 3 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

Content
The lab takes place at the beginning of the winter semester break once a year. The registration is possible during the lecture period in the secretariat of the Institute of Applied Materials (IAM – WK). The lab is carried out in the Handwerkskammer Karlsruhe.

learning objectives: The students are capable to name a survey of current welding processes and their suitability for joining different metals. The students can evaluate the advantages and disadvantages of the individual procedures. The students have weld with different welding processes.

requirements:

You need sturdy shoes and long clothes!

workload:

regular attendance: 31,5 hours
preparation: 8,5 hours
lab report: 80 hours

Organizational issues
Die Anmeldung erfolgt durch den Beitritt in den ILIAS-Kurs.

Die Lehrveranstaltung "Experimentelles schweißtechnisches Praktikum" findet dieses Jahr wieder in der Woche vom 03.-07. März 2025 statt. Der Veranstaltungsort ist die

Bildungsakademie Handwerkskammer Karlsruhe
Hertzstr. 177
76187 Karlsruhe

Die Gruppeneinteilung in die beiden Gruppen findet Anfang Februar statt!

- Gruppe 1. Montag 7.30 Uhr bis Mittwoch 12.00 Uhr
- Gruppe 2. Mittwoch 13.00 Uhr bis Freitag 15.00 Uhr

Sollte aufgrund anderer LV oder Prüfungen für Sie nur eine der beiden Gruppen in Frage kommen, melden Sie sich bitte rechtzeitig unter iam-wk-lehre@iam.kit.edu

Bitte bringen Sie festes und geschlossenes Schuhwerk (optimalerweise Arbeitsschuhe) und lange und entbehrliche Hosen sowie Oberteile mit, da wir uns die Hände schmutzig machen und mit flüssigem, umherfliegendem Metall konfrontiert sein werden. Für die Mittagspause können Sie sich selbst versorgen oder auch in der Mensa der Bildungsakademie essen.

Literature
wird im Praktikum ausgegeben

T 3.191 Course: Fabrication Processes in Microsystem Technology [T-MACH-102166]

Responsible: Dr. Klaus Bade
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each term	1

Events					
WT 24/25	2143882	Fabrication Processes in Microsystem Technology	2 SWS	Lecture /	Bade
ST 2025	2143882	Fabrication Processes in Microsystem Technology	2 SWS	Lecture /	Bade
Exams					
WT 24/25	76-T-MACH-102166	Fabrication Processes in Microsystem Technology			Bade

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

Assessment
Oral examination, 20 minutes

Prerequisites
none

Workload
120 hours

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

V Fabrication Processes in Microsystem Technology

2143882, WS 24/25, 2 SWS, Language: German, Open in study portal

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

Literature
M. Madou
Fundamentals of Microfabrication
CRC Press, Boca Raton, 1997
W. Menz, J. Mohr, O. Paul
Mikrosystemtechnik für Ingenieure
Dritte Auflage, Wiley-VCH, Weinheim 2005
L.F. Thompson, C.G. Willson, A.J. Bowden
Introduction to Microlithography
2nd Edition, ACS, Washington DC, 1994

V Fabrication Processes in Microsystem Technology

2143882, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture offers an advanced understanding of manufacturing processes in microsystem technology. Basic aspects of microtechnological processing will be introduced. With examples from semiconductor microfabrication and microsystem technology the base processing steps for conditioning and finishing, patterning, removal are imparted. Nano-patterning is covered is also included and the micro-nano interface is discussed. By the help of typical processing steps elementary mechanisms, process execution, and equipment are explained. Additionally quality control, process control and environmental topics are included

Literature

M. Madou
Fundamentals of Microfabrication

CRC Press, Boca Raton, 1997

W. Menz, J. Mohr, O. Paul

Mikrosystemtechnik für Ingenieure

Dritte Auflage, Wiley-VCH, Weinheim 2005

L.F. Thompson, C.G. Willson, A.J. Bowden
Introduction to Microlithography
2nd Edition, ACS, Washington DC, 1994

T 3.192 Course: Facility Location and Strategic Supply Chain Management [T-WIWI-102704]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	4

Events					
WT 24/25	2550486	Facility Location and Strategic Supply Chain Management	2 SWS	Lecture / 🗣	Nickel
WT 24/25	2550487	Exercises for Facility Location and Strategic Supply Chain Management	1 SWS	Practice / 🗣	Hoffmann
Exams					
WT 24/25	7900091	Facility Location and Strategic Supply Chain Management			Nickel
ST 2025	7900027	Facility Location and Strategic Supply Chain Management			Nickel

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

Assessment
The assessment consists of a written exam (60 min) according to Section 4 (2), 1 of the examination regulation.
The exam takes place in every semester.
Prerequisite for admission to examination is the succesful completion of the online assessments.

Prerequisites
Prerequisite for admission to examination is the succesful completion of the online assessments.

Recommendations
None

Additional Information
The lecture is held in every winter term. The planned lectures and courses for the next three years are announced online.

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

V Facility Location and Strategic Supply Chain Management

2550486, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Organizational issues
Für die Klausurzulassung müssen 4 von 5 Online-Tests bestanden sein.

Die Zulassung ist ein Jahr gültig, außer es handelt sich um einen Zweitversuch. In diesem Falle müssen die Online-Tests nicht erneut absolviert werden.

Literature
Weiterführende Literatur:

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

T 3.193 Course: Failure of Structural Materials: Deformation and Fracture [T-MACH-102140]

Responsible: Prof. Dr. Peter Gumbsch
Dr. Daniel Weygand
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2181711	Failure of structural materials: deformation and fracture	3 SWS	Lecture / Practice (/ 🗣	Gumbsch, Weygand
Exams					
WT 24/25	76-T-MACH-102140	Failure of Structural Materials: Deformation and Fracture			Weygand, Gumbsch, Kraft
ST 2025	76-T-MACH-102140	Failure of Structural Materials: Deformation and Fracture			Weygand, Gumbsch

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

Assessment
oral exam ca. 30 minutes

no tools or reference materials

Prerequisites
none

Recommendations
preliminary knowlegde in mathematics, mechanics and materials science

Additional Information
The course is offered in German.

Workload
120 hours

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

V Failure of structural materials: deformation and fracture

2181711, WS 24/25, 3 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content

1. Introduction
2. linear elasticity
3. classification of stresses
4. Failure due to plasticity
    - tensile test
    - dislocations
    - hardening mechanisms
    - guidelines for dimensioning
5. composite materials
6. fracture mechanics
    - hypotheses for failure
    - linear elasic fracture mechanics
    - crack resitance
    - experimental measurement of fracture toughness
    - defect measurement
    - crack propagation
    - application of fracture mechanics
    - atomistics of fracture

The student

- has the basic understanding of mechanical processes to explain the relationship between externally applied load and materials strength.
- can explain the foundation of linear elastic fracture mechanics and is able to determine if this concept can be applied to a failure by fracture.
- can decribe the main empirical materials models for deformation and fracture and can apply them.
- has the physical understanding to describe and explain phenomena of failure.

preliminary knowlegde in mathematics, mechanics and materials science recommended

regular attendance: 22,5 hours
self-study: 97,5 hours

The assessment consists of an oral examination (ca. 30 min) according to Section 4(2), 2 of the examination regulation.

Organizational issues
Übungstermine werden in der Vorlesung bekannt gegeben!

Die Veranstaltung wird letztmals im Wintersemester 2025/2026 angeboten!

Literature

- Engineering Materials, M. Ashby and D.R. Jones (2nd Edition, Butterworth-Heinemann, Oxford, 1998); sehr lesenswert, relativ einfach aber dennoch umfassend, verständlich
- Mechanical Behavior of Materials, Thomas H. Courtney (2nd Edition, McGraw Hill, Singapur); Klassiker zu den mechanischen Eigenschaften der Werkstoffe, umfangreich, gut
- Bruchvorgänge in metallischen Werkstoffen, D. Aurich (Werkstofftechnische Verlagsgesellschaft Karlsruhe), relativ einfach aber dennoch umfassender Überblick für metallische Werkstoffe

T 3.194 Course: Failure of Structural Materials: Fatigue and Creep [T-MACH-102139]

Responsible: Dr. Patric Gruber
Prof. Dr. Peter Gumbsch
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2181715	Failure of Structural Materials: Fatigue and Creep	2 SWS	Lecture / 🗣	Gruber, Gumbsch
Exams					
WT 24/25	76-T-MACH-102139	Failure of Structural Materials: Fatigue and Creep			Gruber, Gumbsch
ST 2025	76-T-MACH-102139	Failure of Structural Materials: Fatigue and Creep			Gruber, Gumbsch

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

Assessment
oral exam ca. 30 minutes

no tools or reference materials

Prerequisites
none

Recommendations
preliminary knowlegde in mathematics, mechanics and materials science

Additional Information
The course is offered in German.

Workload
120 hours

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

V Failure of Structural Materials: Fatigue and Creep — **Lecture (V) On-Site**
2181715, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
1 Fatigue
1.1 Introduction
1.2 Lifetime
1.3 Fatigue Mechanisms
1.4 Material Selection
1.5 Notches and Shape Optimization
1.6 Case Studies: ICE-Accidents

2 Creep
2.1 Introduction
2.2 High Temperature Plasticity
2.3 Phänomenological DEsciption of Creep
2.4 Creep Mechanisms
2.5 Alloying Effects

The student

- has the basic understanding of mechanical processes to explain the relationships between externally applied load and materials strength.
- can describe the main empirical materials models for fatigue and creep and can apply them.
- has the physical understanding to describe and explain phenomena of failure.
- can use statistical approaches for reliability predictions.
- can use its acquired skills, to select and develop materials for specific applications.

preliminary knowlegde in mathematics, mechanics and materials science recommended

regular attendance: 22,5 hours
self-study: 97,5 hours

The assessment consists of an oral examination (ca. 30 min) according to Section 4(2), 2 of the examination regulation.

Organizational issues
Die Veranstaltung wird letztmals im Wintersemester 2025/2026 angeboten!

Literature

- Engineering Materials, M. Ashby and D.R. Jones (2nd Edition, Butterworth-Heinemann, Oxford, 1998); sehr lesenswert, relativ einfach aber dennoch umfassend, verständlich
- Mechanical Behavior of Materials, Thomas H. Courtney (2nd Edition, McGraw Hill, Singapur); Klassiker zu den mechanischen Eigenschaften der Werkstoffe, umfangreich, gut
- Bruchvorgänge in metallischen Werkstoffen, D. Aurich (Werkstofftechnische Verlagsgesellschaft Karlsruhe), relativ einfach aber dennoch umfassender Überblick für metallische Werkstoffe
- Fatigue of Materials, Subra Suresh (2nd Edition, Cambridge University Press); Standardwerk über Ermüdung, alle Materialklassen, umfangreich, für Einsteiger und Fortgeschrittene

T 3.195 Course: Financial Accounting and Cost Accounting [T-WIWI-102816]

Responsible: Dr. Jan-Oliver Strych
Organisation: KIT Department of Informatics
KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each winter term	1

Exams			
WT 24/25	7900018	Financial Accounting and Cost Accounting	Ruckes
ST 2025	7900168	Financial Accounting and Cost Accounting	Ruckes

Assessment
The assessment consists of a written exam following §4, Abs. 2, 1 of the examination regulation.

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

Prerequisites
None

T 3.196 Course: Financial Accounting for Global Firms [T-WIWI-107505]

Responsible: Dr. Torsten Luedecke
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2530242	Financial Accounting for Global Firms	2 SWS	Lecture / 🗣	Luedecke
WT 24/25	2530243	Übung zu Financial Accounting for Global Firms	1 SWS	Practice / 🗣	Luedecke
Exams					
WT 24/25	7900142	Financial Accounting for Global Firms			Luedecke, Ruckes
ST 2025	7900195	Financial Accounting for Global Firms			Luedecke

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

Assessment
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None

Recommendations
Basic knowledge in corporate finance and accounting.

Additional Information
New lecture in the winter term 2017/18.

Workload
135 hours

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

V Financial Accounting for Global Firms

2530242, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Literature
Alexander, D. and C. Nobes (2017): Financial Accounting – An International Introduction, 6th ed., Pearson.

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

T 3.197 Course: Financial Analysis [T-WIWI-102900]

Responsible: Dr. Torsten Luedecke
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	2

Events					
ST 2025	2530205	Financial Analysis	2 SWS	Lecture / 🗣	Luedecke
ST 2025	2530206	Übungen zu Financial Analysis	2 SWS	Practice / 🗣	Luedecke
Exams					
WT 24/25	7900059	Financial Analysis			Ruckes, Luedecke
ST 2025	7900075	Financial Analysis			Luedecke

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

Assessment
See German version.

Prerequisites
None

Recommendations
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 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

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 3.198 Course: Financial Econometrics [T-WIWI-103064]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	2

Events					
WT 24/25	2520022	Financial Econometrics I	2 SWS	Lecture / 🗣	Schienle, Buse
WT 24/25	2520023	Übungen zu Financial Econometrics I	2 SWS	Practice / 🗣	Schienle, Buse
Exams					
WT 24/25	7900123	Financial Econometrics II			Schienle
WT 24/25	7900126	Financial Econometrics			Schienle
ST 2025	7900223	Financial Econometrics			Schienle

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

Assessment
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendations
Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics"[2520016]

Additional Information
The next lecture will take place in the winter semester 2022/23.

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

V Financial Econometrics I

2520022, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Learning objectives:

The student

- shows a broad knowledge of fincancial econometric estimation and testing techniques
- is able to apply his/her technical knowledge using software in order to critically assess empirical problems

Content:

ARMA, ARIMA, ARFIMA, (non)stationarity, causality, cointegration, ARCH/GARCH, stochastic volatility models, computer based exercises

Requirements:

It is recommended to attend the course *Economics III: Introduction to Econometrics* [2520016] prior to this course.

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Literature

Taylor, S. J. (2005): "Asset Price Dynamics, Volatility, and Prediction", Princeton University Press.

Tsay, R. S. (2005): "Analysis of Financial Time Series: Financial Econometrics", Wiley, 2nd edition.

Cochrane, J. H. (2005): "Asset Pricing", revised edition, Princeton University Press.

Campbell, J. Y., A. W. Lo, and A. C. MacKinlay (1997): "The Econometrics of Financial Markets", Princeton University Press.

Hamilton, J. D. (1994): "Time Series Analysis", Princeton University Press.

Additional literature will be discussed in the lecture.

T 3.199 Course: Financial Econometrics II [T-WIWI-110939]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	3

Events					
ST 2025	2521302	Financial Econometrics II	2 SWS	Lecture / 🗣	Schienle, Buse
ST 2025	2521303	Übung zu Financial Econometrics II	1 SWS	Practice / 🗣	Buse, Schienle
Exams					
ST 2025	7900081	Financial Econometrics II			Schienle

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

Assessment
Written examination (90 minutes). If the number of participants is low, an oral examination will be held instead.

Prerequisites
None

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

Additional Information
Course language is English
The next lecture will take place in the summer semester of 2023.

Workload
135 hours

T 3.200 Course: Financial Intermediation [T-WIWI-102623]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2530232	Financial Intermediation	2 SWS	Lecture / 🗣	Ruckes
WT 24/25	2530233	Übung zu Finanzintermediation	1 SWS	Practice	Ruckes, Benz
Exams					
WT 24/25	7900063	Financial Intermediation			Ruckes
ST 2025	7900078	Financial Intermediation			Ruckes

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

Assessment
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

Recommendations
None

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

V Financial Intermediation

2530232, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Organizational issues
Terminankündigungen des Instituts beachten

Literature
Weiterführende Literatur:

- Hartmann-Wendels/Pfingsten/Weber (2014): Bankbetriebslehre, 6. Auflage, Springer Verlag.
- Freixas/Rochet (2008): Microeconomics of Banking, 2. Auflage, MIT Press.

T 3.201 Course: Financial Management [T-WIWI-102605]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2530216	Financial Management	2 SWS	Lecture / 🗣	Ruckes
ST 2025	2530217	Übung zu Financial Management	1 SWS	Practice / 🗣	Ruckes
Exams					
WT 24/25	7900060	Financial Management			Ruckes
ST 2025	7900074	Financial Management			Ruckes

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

Assessment
The assessment consists of a written exam (60 min.) according to Section 4 (2), 1 of the examination regulation.
The exam takes place at every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Recommendations
Knowledge of the content of the course Business Administration: Finance and Accounting [25026/25027] is recommended.

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

V Financial Management

2530216, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Literature
Weiterführende Literatur:

- Ross, Westerfield, Jaffe, Jordan (2009): Modern Financial Management, McGraw-Hill International Edition
- Berk, De Marzo (2016): Corporate Finance, 4. Edition, Pearson Addison Wesley

T 3.202 Course: FinTech [T-WIWI-112694]

Responsible: TT-Prof. Dr. Julian Thimme
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2500032	FinTech	3 SWS	Lecture / Practice (/ 🗣	Thimme
Exams					
WT 24/25	7900064	FinTech			Thimme
ST 2025	7900089	FinTech			Thimme

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

Assessment
Written examination (90 minutes) during the lecture-free period of the semester (according to §4(2), 1 SPO).

The examination is offered every semester and can be repeated at any regular examination date.

Prerequisites
None

Recommendations
Knowledge of the course Business Administration: Finance and Accounting [25026/25027] is very helpful.

Workload
135 hours

T 3.203 Course: Foundations of Informatics I [T-WIWI-102749]

Responsible: Dr.-Ing. Tobias Käfer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each summer term	2

Events					
ST 2025	2511010	Foundations of Informatics I	2 SWS	Lecture / 🗣	Käfer
ST 2025	2511011	Exercises to Foundations of Informatics I		Practice / 🗣	Käfer, Popovic, Noullet, Kinder
Exams					
WT 24/25	79AIFB_Info1_A5	Foundations of Informatics I			Käfer
ST 2025	79AIFB_Info1	Foundations of Informatics I (Registration until 21 July 2025)			Käfer

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

Assessment
The assessment consists of an 1h written exam according to Section 4 (2), 1 of the examination regulation.

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

Prerequisites
None

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

V Foundations of Informatics I

2511010, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture provides an introduction to basic concepts of computer science and software engineering. Essential theoretical foundations and problem-solving approaches, which are relevant in all areas of computer science, are presented and explained, as well as shown in practical implementations.

The following topics are covered:

- Object Oriented Modeling
- Logic (Propositional Calculus, Predicate Logic, Boolean Algebra)
- Algorithms and Their Properties
- Sort-and Search-Algorithms
- Complexity Theory
- Problem Specification
- Dynamic Data Structures

Learning objectives:

The student

- is able to formalise tasks in the domain of informatics and is able to identify solution methods
- knows the basic terminology of computer science and is capable of applying these terms to different problems.
- knows basic programming structures and is able to apply them (particularly simple data structures, object interaction and implementation of basic algorithms).

Workload:

- The total workload for this course is approximately 150 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 67.5 hours
- Exam and exam preperation: 37.5 hours

Literature

- H. Balzert. Lehrbuch Grundlagen der Informatik. Spektrum Akademischer Verlag 2004.
- U. Schöning. Logik für Informatiker. Spektrum Akademischer Verlag 2000.
- T. H. Cormen, C. E. Leiserson. Introduction to Algorithms, MIT Press 2001.

V Exercises to Foundations of Informatics I

Practice (Ü)
On-Site

2511011, SS 2025, SWS, Language: German, Open in study portal

Content
The exercises are related to the lecture Foundations of Informatics I.

Multiple exercises are held that capture the topics, held in the lecture Foundations of Informatics I, 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:

- Object Oriented Modeling
- Logic (Propositional Calculus, Predicate Logic, Boolean Algebra)
- Algorithms and Their Properties
- Sort-and Search-Algorithms
- Complexity Theory
- Problem Specification
- Dynamic Data Structures

Learning objectives:

The student

- is able to formalise tasks in the domain of informatics and is able to identify solution methods
- knows the basic terminology of computer science and is capable of applying these terms to different problems.
- knows basic programming structures and is able to apply them (particularly simple data structures, object interaction and implementation of basic algorithms).

Literature

- H. Balzert. Lehrbuch Grundlagen der Informatik. Spektrum Akademischer Verlag 2004.
- U. Schöning. Logik für Informatiker. Spektrum Akademischer Verlag 2000.
- T. H. Cormen, C. E. Leiserson. Introduction to Algorithms, MIT Press 2001.

T 3.204 Course: Foundations of Informatics II [T-WIWI-102707]

Responsible: Prof. Dr. Sanja Lazarova-Molnar
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each winter term	1

Events					
WT 24/25	2511012	Foundations of Informatics II	3 SWS	Lecture / 🗣	Lazarova-Molnar
WT 24/25	2511013	Tutorien zu Grundlagen der Informatik II	1 SWS	Tutorial (/ 🗣	Lazarova-Molnar, Götz, Khodadadi
Exams					
WT 24/25	79AIFB_Info2_Deutsch	Foundations of Informatics II			Lazarova-Molnar
WT 24/25	79AIFB_Info2_English	Grundlagen der Informatik II (englischsprachige Klausur, Anmeldung bis 03.02.2025)			Lazarova-Molnar
ST 2025	79AIFB_Info2_Deutsch	Foundations of Informatics II (written exam in German, registration until 21 July 2025)			Lazarova-Molnar
ST 2025	79AIFB_Info2_English	Grundlagen der Informatik II (englischsprachige Klausur, Anmeldung bis 21.07.2025)			Lazarova-Molnar

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

Assessment
The assessment consists of a written exam according to Section 4(2), 1 of the examination regulation. The examination takes place every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Recommendations
It is recommended to attend the course "Foundations of Informatics I" beforehand.

Active participation in the practical lessons is strongly recommended.

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

V Foundations of Informatics II

2511012, WS 24/25, 3 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The lecture deals with formal models for automata, languages and algorithms as well as real instances of these models, i.e. computer architecture and organization (hardware development, computer arithmetic, architecture models), programing languages (different language levels, from microprogramming to higher programming languages, as well as compiling and execution), operating systems and modes (architecture and properties of operating systems, operating system tasks, client-server systems), data organization and management (types of data organization, primary and secondary organization).

Learning objectives:

- Students acquire vast knowledge of methods and concepts in theoretical computer science and computer architectures.
- Based on the acquired knowledge and skills, students are capable of choosing and applying the appropriate methods and concepts for well-defined problem instances.
- Active participation in the tutorials enables students to acquire the necessary knowledge for developing appropriate solutions cooperatively.

Recommendations:

It is recommended to attend the course *Foundations of Informatics I* [2511010] beforehand.

Active participation in the practical lessons is strongly recommended.

Workload:

The total workload for this course is approximately 150 hours.

Organizational issues
Die Vorlesung wird zu Beginn des Semesters 4-stündig und am Ende 2-stündig gelesen, um eine bessere Abdeckung des Inhalts in den Übungen zu gewährleisten.

Literature
Weiterführende Literatur:
Literatur wird in der Vorlesung bekannt gegeben.

T 3.205 Course: Foundations of Interactive Systems [T-WIWI-109816]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each summer term	3

Events					
ST 2025	2540560	Foundations of Interactive Systems	3 SWS	Lecture /	Mädche, Feick
Exams					
WT 24/25	7900326	Foundations of Interactive Systems			Mädche
ST 2025	7900247	Foundations of Interactive Systems			Mädche

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

Assessment
Alternative exam assessment. The assessment is carried out in the form of a one-hour written examination and by carrying out a Capstone project.

Details on the assessment will be announced during the lecture.

Prerequisites
None

Recommendations
None

Workload
135 hours

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

V Foundations of Interactive Systems — **Lecture (V)**
2540560, SS 2025, 3 SWS, Language: English, Open in study portal — **Blended (On-Site/Online)**

Content
Lecture Description

Computers have evolved from batch processors to highly interactive systems. This offers new possibilities besides challenges for designing a successful interaction between humans and computers. Interactive systems are socio-technical systems in which users perform tasks by interacting with technology in a specific context to achieve specified goals and outcomes.

This lecture introduces key concepts and principles of interactive systems from a human and computer perspective. From a human perspective, we discuss selected individual characteristics, cognitive processes, the interplay between cognition and activity, as well asmental models. From a computer perspective, we introduce established interaction technologies as well as contemporary multimodal technologies (e.g. augmented/mixed reality, eye-based interaction, etc.). We also introduce established principles and guidelines for designing user interfaces.. Furthermore, we describe the human-centered design process for interactive systems and supporting techniques & tools (e.g. personas, prototyping, user testing).

With this lecture, students acquire foundational knowledge to successfully **design the interaction between humans and computers** in business and private life. The course is complemented with a **Design Capstone Project**, where students in a team apply design methods & techniques to create an interactive prototype.

Learning Objectives

The students

- have a basic understanding of key conceptual and theoretical foundations of interactive systems from a human and computer perspective
- are aware of important design principles for the design of important classes of interactive systems
- know design processes and techniques for developing interactive systems
- know how to apply the knowledge and skills gathered in the lecture for a real-world problem (as part of design capstone project)

Prerequisites: No specific prerequisites are required for the lecture

Language of instruction: English

Bibliography

Alan Dix, Janet E. Finlay, Gregory D. Abowd, and Russell Beale. 2003. Human-Computer Interaction (3rd Edition). Prentice-Hall, Inc., USA.

Further literature will be made available in the lecture. In case of questions feel free to approach Siu Liu (siu.liu@kit.edu).

Die Erfolgskontrolle erfolgt in Form einer Prüfungsleistung anderer Art (Form) nach § 4 Abs. 2 Nr. 3 SPO. Die Leistungskontrolle erfolgt in Form einer einstündigen Klausur und der Durchführung eines Capstone Projektes. Details zur Ausgestaltung der Erfolgskontrolle werden im Rahmen der Vorlesung bekannt gegeben.

T 3.206 Course: Foundry Technology [T-MACH-105157]

Responsible: Dr.-Ing. Daniel Günther
Dr.-Ing. Steffen Klan

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	3

Events					
ST 2025	2174575	Foundry Technology	2 SWS	Lecture /	Klan, Günther

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

Assessment
The assessment is carried out as a written exam of about 1 h.

Prerequisites
none

Recommendations
The lectures Materials Science I and Materials Science II should have been attended in advance.

Additional Information
The course is offered in German.

Workload
120 hours

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

V Foundry Technology

2174575, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Literature
Literaturhinweise werden in der Vorlesung gegeben

Reference to literature, documentation and partial lecture notes given in lecture

T 3.207 Course: Freight Transport [T-BGU-106611]

Responsible: Dr. Eckhard Szimba
Prof. Dr.-Ing. Peter Vortisch
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	3 CP	graded	Each term	1 terms	2

Events					
ST 2025	6232809	Freight Transport	2 SWS	Lecture / Practice (/	Szimba
Exams					
WT 24/25	8245106611	Freight Transport			Vortisch
ST 2025	8245106611	Freight Transport			Chlond

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

Assessment
written exam, 60 min.

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
90 hours

T 3.208 Course: Fuels and Lubricants for Combustion Engines [T-MACH-105184]

Responsible: Hon.-Prof. Dr. Bernhard Ulrich Kehrwald
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2133108	Fuels and Lubricants for Combustion Engines	2 SWS	Lecture / 🗣	Kehrwald
Exams					
WT 24/25	76-T-MACH-105184	Fuels and Lubricants for Combustion Engines			Kehrwald
ST 2025	76-T-MACH-105184	Fuels and Lubricants for Combustion Engines			Kehrwald

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

Assessment
oral examination, Duration: ca. 25 min., no auxiliary means

Prerequisites
none

Additional Information
The course is offered in German.

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

V Fuels and Lubricants for Combustion Engines

2133108, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
electric drives and fuel cell drives with the associated operating materials will also be presented

- Introduction, basics, primary energy and energy chains
- Illustrative chemistry of hydrocarbons
- Fossil fuels, exploration, processing, standards
- Operating materials not fossil, renewable, alternative
- Fuels, lubricants, coolants, AdBlue
- Laboratory analysis, testing, test benches and measurement technology
- Excursion to test fields for motorized drives from 0.5 to 3,500 kW

Literature
Skript

T 3.209 Course: Fundamentals for Design of Motor-Vehicle Bodies I [T-MACH-102116]

Responsible: Dipl.-Ing. Horst Dietmar Bardehle
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	2 CP	graded	Each winter term	1

Events					
WT 24/25	2113814	Fundamentals for Design of Motor-Vehicles Bodies I	1 SWS	Lecture / 🗣	Bardehle
Exams					
WT 24/25	76-T-MACH-102116	Fundamentals for Design of Motor-Vehicle Bodies I			Bardehle
ST 2025	76-T-MACH-102116	Fundamentals for Design of Motor-Vehicle Bodies I			Bardehle, Knoch

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

Assessment
Oral group examination

Duration: 30 minutes

Auxiliary means: none

Prerequisites
none

Workload
60 hours

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

V Fundamentals for Design of Motor-Vehicles Bodies I

2113814, WS 24/25, 1 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
1. History and design

2. Aerodynamics

3. Design methods (CAD/CAM, FEM)

4. Manufacturing methods of body parts

5. Fastening technologie

6. Body in white / body production, body surface

Learning Objectives:

The students have an overview of the fundamental possibilities for design and manufacture of motor-vehicle bodies. They know the complete process, from the first idea, through the concept to the dimensioned drawings (e.g. with FE-methods). They have knowledge about the fundamentals and their correlations, to be able to analyze and to judge relating components as well as to develop them accordingly.

Organizational issues
Das Vorlesungsmaterial wird auf ILIAS bereitgestellt. Das ILIAS-Passwort erhalten Sie unter https://fast-web-01.fast.kit.edu/Passwoerterlias/

Termine und nähere Informationen: siehe ILIAS oder Institutshomepage

Dates and further information will be published on the homepage of the institute

Literature

1. Automobiltechnische Zeitschrift ATZ, Friedr. Vieweg & Sohn Verlagsges. mbH, Wiesbaden
2. Automobil Revue, Bern (Schweiz)
3. Automobil Produktion, Verlag Moderne Industrie, Landsberg

T 3.210 Course: Fundamentals for Design of Motor-Vehicle Bodies II [T-MACH-102119]

Responsible: Dipl.-Ing. Horst Dietmar Bardehle
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	2 CP	graded	Each summer term	1

Events					
ST 2025	2114840	Fundamentals for Design of Motor-Vehicles Bodies II	1 SWS	Lecture / 🗣	Knoch
Exams					
WT 24/25	76-T-MACH-102119	Fundamentals for Design of Motor-Vehicle Bodies II			Bardehle
ST 2025	76-T-MACH-102119	Fundamentals for Design of Motor-Vehicle Bodies II			Bardehle, Knoch

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

Assessment
Oral examination

Duration: 30 minutes

Auxiliary means: none

Prerequisites
none

Additional Information
The course is offered in German.

Workload
60 hours

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

V Fundamentals for Design of Motor-Vehicles Bodies II

2114840, SS 2025, 1 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
1. Body properties/testing procedures
2. External body-parts
3. Interior trim
4. Compartment air conditioning
5. Electric and electronic features
6. Crash tests
7. Project management aspects, future prospects

Learning Objectives:

The students know that, often the design of seemingly simple detail components can result in the solution of complex problems. They have knowledge in testing procedures of body properties. They have an overview of body parts such as bumpers, window lift mechanism and seats. They understand, as well as, parallel to the normal electrical system, about the electronic side of a motor vehicle. Based on this they are ready to analyze and to judge the relation of these single components. They are also able to contribute competently to complex development tasks by imparted knowledge in project management.

Organizational issues
Voraussichtliche Termine, nähere Informationen und evtl. Änderungen:

siehe Institutshomepage.

Scheduled dates, further Information and possible changes of date:

see homepage of the institute.

Literature

1. Automobiltechnische Zeitschrift ATZ, Friedr. Vieweg & Sohn Verlagsges. mbH, Wiesbaden
2. Automobil Revue, Bern (Schweiz)
3. Automobil Produktion, Verlag Moderne Industrie, Landsberg

T 3.211 Course: Fundamentals in the Development of Commercial Vehicles [T-MACH-111389]

Responsible: Christof Weber
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	see Annotations	2

Events					
WT 24/25	2113812	Fundamentals in the Development of Commercial Vehicles I	1 SWS	Lecture / 🗣	Weber
ST 2025	2114844	Fundamentals in the Development of Commercial Vehicles II	1 SWS	Lecture / 🗣	Weber
Exams					
WT 24/25	76T-MACH-111389	Fundamentals in the Development of Commercial Vehicles			Weber
ST 2025	76T-MACH-111389	Fundamentals in the Development of Commercial Vehicles			Weber

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

Assessment
Oral group examination

Duration: appr. 30 minutes

Auxiliary means: none

Prerequisites
none

Additional Information
Fundamentals in the Development of Commercial Vehicles I, WT

Fundamentals in the Development of Commercial Vehicles II, ST

The course is offered in German.

Workload
120 hours

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

V Fundamentals in the Development of Commercial Vehicles I

2113812, WS 24/25, 1 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
1. Introduction, definitions, history
2. Development tools
3. Complete vehicle
4. Cab, bodyshell work
5. Cab, interior fitting
6. Alternative drive systems
7. Drive train
8. Drive system diesel engine
9. Intercooled diesel engines

Learning Objectives:

The students have proper knowledge about the process of commercial vehicle development starting from the concept and the underlying original idea to the real design. They know that the customer requirements, the technical realisability, the functionality and the economy are important drivers.

The students are able to develop parts and components. Furthermore they have knowledge about different cab concepts, the interior and the interior design process. Consequently they are ready to analyze and to judge concepts of commercial vehicles as well as to participate competently in the commercial vehicle development.

Organizational issues
Das Vorlesungsmaterial wird auf ILIAS bereitgestellt. Das ILIAS-Passwort erhalten Sie unter https://fast-web-01.fast.kit.edu/PasswoerterIlias/

Termine und Nähere Informationen: siehe ILIAS oder Institutshomepage

Dates and further information will be published on the homepage of the institute.

Literature
1. Marwitz, H., Zittel, S.: ACTROS -- die neue schwere Lastwagenbaureihe von Mercedes-Benz, ATZ 98, 1996, Nr. 9

2. Alber, P., McKellip, S.: ACTROS -- Optimierte passive Sicherheit, ATZ 98, 1996

3. Morschheuser, K.: Airbag im Rahmenfahrzeug, ATZ 97, 1995, S. 450 ff.

V Fundamentals in the Development of Commercial Vehicles II

Lecture (V)
On-Site

2114844, SS 2025, 1 SWS, Language: German, Open in study portal

Content
1. Gear boxes of commercial vehicles
2. Intermediate elements of the drive train
3. Axle systems
4. Front axles and driving dynamics
5. Chassis and axle suspension
6. Braking System
7. Systems
8. Excursion

Learning Objectives:

The students know the advantages and disadvantages of different drives. Furthermore they are familiar with components, such as transfer box, propeller shaft, powered and non-powered frontaxle etc. Beside other mechanical components, such as chassis, axle suspension and braking system, also electric and electronic systems are known. Consequently the student are able to analyze and to judge the general concepts as well as to adjust them precisely with the area of application.

Organizational issues
Genaue Termine sowie nähere Informationen und eventuelle Terminänderungen:

siehe Institutshomepage.

Literature

1.HILGERS, M.: Nutzfahrzeugtechnik lernen, Springer Vieweg, ISSN: 2510-1803

2.SCHITTLER, M.; HEINRICH, R.; KERSCHBAUM, W.: Mercedes-Benz Baureihe 500 – neue V-Motorengeneration für schwere Nutzfahrzeuge, MTZ 57 Nr. 9, S. 460 ff, 1996

3.Robert Bosch GmbH (Hrsg.): Bremsanalgen für Kraftfahrzeuge, VDI-Verlag, Düsseldorf, 1. Auflage, 1994

4.RUBI, V.; STRIFLER, P. (Hrsg. Institut für Kraftfahrwesen RWTH Aachen): Indiustrielle Nutzfahrzeugentwicklung, Schriftenreihe Automobiltechnik, 1993

5.TEUTSCH, R.; CHERUTI, R.; GASSER, R.; PEREIRA, M.; de SOUZA, A.; WEBER, C.: Fuel Efficiency Optimization of Market Specific Truck Applications, Proceedings of the 5th Commercial Vehicle Technology Symposium – CVT 2018

T 3.212 Course: Fundamentals of Catalytic Exhaust Gas Aftertreatment [T-MACH-105044]

Responsible: Prof. Dr. Olaf Deutschmann
Prof. Dr. Jan-Dierk Grunwaldt
Dr.-Ing. Heiko Kubach
Hon.-Prof. Dr. Egbert Lox

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2134138	Fundamentals of catalytic exhaust gas aftertreatment	2 SWS	Lecture / 🗣	Lox, Grunwaldt, Deutschmann
Exams					
ST 2025	76-T-MACH-105044	Fundamentals of Catalytic Exhaust Gas Aftertreatment			Lox

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

Assessment
oral examination, Duration approx. 25 min., no auxiliary means

Prerequisites
none

Additional Information
The course is offered in German

Workload
120 hours

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

V Fundamentals of catalytic exhaust gas aftertreatment

2134138, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Organizational issues
Wenn Sie beabsichtigen, an der Vorlesung teilzunehmen, melden Sie sich bitte unter info@ifkm.kit.edu mit dem Betreff "Anmeldung Vorlesung Lox" an. Das hilft uns bei der Planung. Der Dozent hat eine sehr weite Anreise und wir möchten verhindern, dass die Mindestteilnehmerzahl nicht erreicht wird.

T 3.213 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-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2560133	Fundamentals of National and International Group Taxation	3 SWS	Lecture / 🗣	Wigger, Gutekunst
Exams					
WT 24/25	790kobe	Fundamentals of National and International Group Taxation			Wigger
ST 2025	790kobe	Fundamentals of National and International Group Taxation			Wigger

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1.5h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

Prerequisites
None

Recommendations
It is recommended to attend the course “Basics of German Company Tax Law and Tax Planning” beforehand.

Workload
135 hours

T 3.214 Course: Fundamentals of Probability and Statistics for Students of Computer Science [T-MATH-102244]

Responsible: Prof. Dr. Nicole Bäuerle
Dr. rer. nat. Bruno Ebner
Prof. Dr. Vicky Fasen-Hartmann
Prof. Dr. Daniel Hug
PD Dr. Bernhard Klar
Prof. Dr. Günter Last
Prof. Dr. Mathias Trabs
PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: M-WIWI-104905 - Mathematics

Type	Credits	Grading	Version
Written examination	4,5 CP	graded	1

Events					
WT 24/25	0133500	Grundlagen der Wahrscheinlichkeitstheorie und Statistik für Studierende der Informatik	2 SWS	Lecture / 🗣	Göll
WT 24/25	0133600	Übungen zu 0133500	1 SWS	Practice / 🗣	Göll
Exams					
WT 24/25	00013	Fundamentals of Probability and Statistics for Students of Computer Science			Göll, Trabs
ST 2025	00007	Probability Theory and Statistics			Trabs, Ebner, Winter

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

T 3.215 Course: Fundamentals of Production Management [T-WIWI-102606]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	5,5 CP	graded	Each summer term	1

Events					
ST 2025	2581950	Fundamentals of Production Management	2 SWS	Lecture / 🗣	Schultmann
ST 2025	2581951	Übungen Grundlagen der Produktionswirtschaft	2 SWS	Practice / 🗣	Frank, Fuhg
Exams					
WT 24/25	7981950	Fundamentals of Production Management			Schultmann
ST 2025	7981950	Fundamentals of Production Management			Schultmann

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

Assessment
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.

Prerequisites
None

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

V Fundamentals of Production Management

2581950, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
This lecture focuses on strategic production management with respect to various economic aspects. Interdisciplinary approaches of systems theory will be used to describe the challenges of industrial production. This course will emphasize the importance of R&D as the central step in strategic corporate planning to ensure future long-term success. In the field of site selection and planning for firms and factories, attention will be drawn upon individual aspects of existing and greenfield sites as well as existing distribution and supply centres. Students will obtain knowledge in solving internal and external transport and storage problems.

Organizational issues
Blockveranstaltung, siehe Institutsaushang

Literature
Wird in der Veranstaltung bekannt gegeben.

T 3.216 Course: Gas Engines [T-MACH-102197]

Responsible: Dr.-Ing. Rainer Golloch
Dr.-Ing. Heiko Kubach

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Assessment
Oral examination, duration 25 min., no auxillary means

Prerequisites
none

T 3.217 Course: Gear Cutting Technology [T-MACH-102148]

Responsible: Hon.-Prof. Dr. Markus Klaiber
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2149655	Gear Technology	2 SWS	Lecture / 🗣	Klaiber
Exams					
WT 24/25	76-T-MACH-102148	Gear Technology			Klaiber

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

Assessment
Oral Exam (20 min)

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

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

V Gear Technology

2149655, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Based on the gearing theory, manufacturing processes and machine technologies for producing gearings, the needs of modern gear manufacturing will be discussed in the lecture. For this purpose, various processes for various gear types are taught which represent the state of the art in practice today. A classification in soft and hard machining and furthermore in cutting and non-cutting technologies will be made. For comprehensive understanding the processes, machine technologies, tools and applications of the manufacturing of gearings will be introduced and the current developments presented. For assessment and classification of the applications and the performance of the technologies, the methods of mass production and manufacturing defects will be discussed. Sample parts, reports from current developments in the field of research and an excursion to a gear manufacturing company round out the lecture.

Learning Outcomes:

The students …

- can describe the basic terms of gearings and are able to explain the imparted basics of the gearwheel and gearing theory.
- are able to specify the different manufacturing processes and machine technologies for producing gearings. Furthermore they are able to explain the functional principles and the dis-/advantages of these manufacturing processes.
- can apply the basics of the gearing theory and manufacturing processes on new problems.
- are able to read and interpret measuring records for gearings. are able to make an appropriate selection of a process based on a given application
- can describe the entire process chain for the production of toothed components and their respective influence on the resulting workpiece properties.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Literature
Medien:
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.218 Course: Geological Hazards and Risks for External Students [T-PHYS-103117]

Responsible: Dr. Ellen Gottschämmer
Organisation: KIT Department of Physics
Part of: M-WIWI-104904 - Natural Sciences

Type	Credits	Grading	Version
Oral examination	4 CP	graded	1

Events					
WT 24/25	4060121	Geological Hazards and Risk	2 SWS	Lecture / 🗣	Schäfer, Rietbrock
WT 24/25	4060122	Exercises on Geological Hazards and Risk	2 SWS	Practice / 🗣	Schäfer, Rietbrock

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

T 3.219 Course: Global Logistics [T-MACH-105379]

Responsible: Prof. Dr.-Ing. Kai Furmans
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Exams			
ST 2025	76-T-MACH-105379	Global Logistics	Furmans

Assessment
oral exam (approx. 20 min)

Prerequisites
none

Workload
120 hours

T 3.220 Course: Global Logistics [T-MACH-111003]

Responsible: Prof. Dr.-Ing. Kai Furmans
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2149600	Global Logistics	2 SWS	Lecture / 🗣	Furmans
Exams					
ST 2025	7600029	Global Production and Logistics - Part 2: Global Logistics			Furmans
ST 2025	76-T-MACH-105159	Global Production and Logistics - Part 2: Global Logistics / New: Global Logistics			Furmans

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

Assessment
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.

Prerequisites
T-MACH-105159 - Global production and logistics - Part 2: Global logistics must not be started

Workload
120 hours

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

V Global Logistics

2149600, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Content:

Characteristics of global trade

- Incoterms
- Customs clearance, documents and export control

Global transport and shipping

- Maritime transport, esp. container handling
- Air transport

Modeling of supply chains

- SCOR model
- Value stream analysis

Location planning in cross-border-networks

- Application of the Warehouse Location Problem
- Transport Planning

Inventory Management in global supply chains

- Stock keeping policies
- Inventory management considering lead time and shipping costs

Media:

presentations, black board

Workload:

regular attendance: 21 hours
self-study: 99 hours

Students are able to:

- assign basic problems of planning and operation of global supply chains and plan them with apropriate methods,
- describe requirements and characteristics of global trade and transport, and
- evaluate characteristics of the design from logistic chains regarding their suitability.

Exam:

The exam consists of a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

The main exam is offered every summer semester. A second date for the exam is offered in winter semester only for students that did not pass the main exam.

Literature
Weiterführende Literatur:

- Arnold/Isermann/Kuhn/Tempelmeier. HandbuchLogistik, Springer Verlag, 2002 (Neuauflage in Arbeit)
- Domschke. Logistik, Rundreisen und Touren,Oldenbourg Verlag, 1982
- Domschke/Drexl. Logistik, Standorte, OldenbourgVerlag, 1996
- Gudehus. Logistik, Springer Verlag, 2007
- Neumann-Morlock. Operations-Research,Hanser-Verlag, 1993
- Tempelmeier. Bestandsmanagement in SupplyChains, Books on Demand 2006
- Schönsleben. IntegralesLogistikmanagement, Springer, 1998

T 3.221 Course: Global Manufacturing [T-WIWI-112103]

Responsible: Dr. Henning Sasse
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each winter term	1

Events					
WT 24/25	2581956	Global Manufacturing	2 SWS	Lecture / 🏵	Sasse
Exams					
WT 24/25	7981956	Global Manufacturing			Schultmann
ST 2025	7981956	Global Manufacturing			Schultmann

Legend: 🖥 Online, 🏵 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
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.

Prerequisites
None

Recommendations
None

Workload
105 hours

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

V Global Manufacturing

2581956, WS 24/25, 2 SWS, Language: English, Open in study portal

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

Content

- Fundamentals of international business
- Forms of international cooperation and value creation
- Site selection
- Cost driven internationalization and site selection
- Sales and customer driven internationalization and site selection
- Challenges, risks and risk mitigation
- Management of international production sites
- Types and case studies of international production

Organizational issues
Blockveranstaltung, siehe Homepage

Literature
Wird in der Veranstaltung bekannt gegeben.

T 3.222 Course: Global Optimization I [T-WIWI-102726]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2550134	Global Optimization I	2 SWS	Lecture / 🗣	Stein
Exams					
WT 24/25	7900004_WS2425_NK	Global Optimization I			Stein
ST 2025	7900205_SS2025_HK	Global Optimization I			Stein

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

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

The exam is offered in the lecture of semester and the following semester.

The success check can be done also with the success control for "Global optimization II". In this case, the duration of the written exam is 120 min.

Prerequisites
None

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-WIWI-103638 - Global Optimization I and II must not have been started.

Recommendations
None

Additional Information
Part I and II of the lecture are held consecutively in the **same** semester.

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

V Global Optimization I

2550134, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

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

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

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

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

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

Learning objectives:

The student

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

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

Weiterführende Literatur:

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

T 3.223 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-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	9 CP	graded	Each summer term	1

Events					
ST 2025	2550134	Global Optimization I	2 SWS	Lecture / 🗣	Stein
ST 2025	2550135	Exercise to Global Optimization I	1 SWS	Practice / 🗣	Stein, Beck
ST 2025	2550136	Global Optimization II	2 SWS	Lecture / 🗣	Stein
Exams					
WT 24/25	7900006_WS2425_NK	Global Optimization I and II			Stein
ST 2025	7900207_SS2025_HK	Global Optimization I and II			Stein

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

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

The examination is held in the semester of the lecture and in the following semester.

Prerequisites
None

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-WIWI-102726 - Global Optimization I must not have been started.
2. The course T-WIWI-102727 - Global Optimization II must not have been started.

Recommendations
None

Additional Information
Part I and II of the lecture are held consecutively in the **same** semester.

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

V Global Optimization I

2550134, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

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

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

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

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

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

Learning objectives:

The student

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

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

Weiterführende Literatur:

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

V Global Optimization II

2550136, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

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

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

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via alphaBB method
- Branch-and-bound methods
- Lipschitz optimization

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

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

Learning objectives:

The student

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

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

Weiterführende Literatur:

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

T 3.224 Course: Global Optimization II [T-WIWI-102727]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	2

Events					
ST 2025	2550136	Global Optimization II	2 SWS	Lecture / 🗣	Stein
ST 2025	2550137	Exercise to Global Optimization II	1 SWS	Practice / 🗣	Stein, Beck
Exams					
WT 24/25	7900005_WS2425_NK	Global Optimization II			Stein
ST 2025	7900206_SS2025_HK	Global Optimization II			Stein

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

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

The examination is held in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of "Global optimization I". In this case, the duration of the written examination takes 120 minutes.

Prerequisites
None

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-WIWI-103638 - Global Optimization I and II must not have been started.

Additional Information
Part I and II of the lecture are held consecutively in the **same** semester.

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

V Global Optimization II

2550136, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

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

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

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via alphaBB method
- Branch-and-bound methods
- Lipschitz optimization

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

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

Learning objectives:

The student

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

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

Weiterführende Literatur:

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

T 3.225 Course: Global Production [T-MACH-113832]

Responsible: Prof. Dr.-Ing. Gisela Lanza
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each winter term	1

Exams			
WT 24/25	76-T-MACH-113832	Global Production	Lanza
ST 2025	76-T-MACH-113832	Global Production	Lanza

Assessment
Written Exam (60 min)

Prerequisites
T-MACH-108848 - Globale Produktion und Logistik - Teil 1: Globale Produktion must not be commenced.
T-MACH-105158 - Globale Produktion und Logistik - Teil 1: Globale Produktion must not be commenced.
T-MACH-110337 - Globale Produktion und Logistik must not be commenced.

Additional Information
The course is offered in English.

Workload
150 hours

T 3.226 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-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	2

Assessment
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

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

Additional Information
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 3.227 Course: Growth and Development [T-WIWI-112816]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2561503	Growth and Development	2 SWS	Lecture / 🗣	Ott
WT 24/25	2561504	Exercise for Growth and Development	1 SWS	Practice / 🗣	Ott, Ghoniem
Exams					
WT 24/25	7900078	Growth and Development			Ott
ST 2025	7900105	Growth and Development			Ott

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

Assessment
Depending on further pandemic developments, the examination will be offered either as an open-book examination or as a 60-minute written examination.

Prerequisites
None

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
135 hours

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

V **Growth and Development** — **Lecture (V) On-Site**
2561503, WS 24/25, 2 SWS, Language: German/English, Open in study portal

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 3.228 Course: Guide to Cruising through Informatics Program of Studies at KIT (eezi) [T-INFO-109862]

Responsible: Prof. Dr. Bernhard Beckert
Christine Glaubitz
Organisation: KIT Department of Informatics
Part of: M-WIWI-104910 - Interdisciplinary Qualifications

Type	Credits	Grading	Recurrence	Version
Coursework	1 CP	pass/fail	Each winter term	1

Events					
WT 24/25	2400037	Guide to navigating KIT Department of Informatics' Program of Studies		Others (sons / 🧩	Glaubitz
WT 24/25	2411809	Tutorial for Guide to cruising through Informatics program of studies at KIT (eezi)		Tutorial (/ 🧩	Glaubitz
Exams					
WT 24/25	7500341	Guide to cruising though Informatics program of studies at KIT (eezi)			Beckert

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

Additional Information
The Module **eezi**, pronounced "easy", is a guide to navigating KIT Department of Informatics' program of studies. This Module is aimed at and recommended to all first-semester bachelor students of informatics, information systems / Teaching Degree Program in Computer Science (Bachelor of Education) at KIT.

The module consists of three lecture, six tutorials and worksheets, a tutor check-in chat and an eezi-advising session. The intention is to provide students assistance with the transition into their program of study as well as to strengthen the personal autonomy and soft skills.

Course topics include: Time, self, study, stress management, study techniques, exam preparation, as well as tips and tricks "How to survive the first semester" and "What do I need to do to manage my studies". The focus is on helping students to help themselves in order to provide them with long-term strategies for successfully manage their studies.

The check-in chat is designed to provide a one-on-one, eye-to-eye exchange between first-semester students with upper-semester students.

The eezi-advising session serves to answer students' questions about their studies and to assess their study situation. This includes reflection and evaluation of their own progress, as well as discussion of possible problems and successes.

Successful completion of the course is credited with 1 ECTS as a key qualification for study progress.

Audience: For first semester bachelor students in one of the following majors: Informatics / Information Systems / Teaching Degree Program in Computer Science at KIT.

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

V Guide to navigating KIT Department of Informatics' Program of Studies

2400037, WS 24/25, SWS, Language: German/English, Open in study portal

Others (sonst.)
Blended (On-Site/Online)

Content

The Module **eezi**, pronounced "easy", is a guide to navigating KIT Department of Informatics' program of studies. This Module is aimed at and recommended for all first-semester bachelor students majoring in informatics, information systems / Teaching Degree Program in Computer Science (Bachelor of Education) at KIT.

The module consists of three lecture, six tutorials and worksheets, a tutor check-in chat and an eezi-advising session. The intention is to provide students assistance with the transition into their program of study as well as to strengthen the personal autonomy and soft skills.

Course topics include: Time, self, study, stress management, study techniques, exam preparation, as well as tips and tricks "How to survive the first semester" and "What do I need to do to manage my studies". The focus is on helping students to help themselves in order to provide them with long-term strategies for successfully manage their studies.

Students have the option of choosing either a tutorial in German or in English

The tutor check-in chat is designed to provide a one-on-one, eye-to-eye exchange between first-semester students with upper-semester students.

The eezi-advising session serves to answer students' questions about their studies and to assess their study situation. This includes reflection and evaluation of their own progress, as well as discussion of possible problems and successes. (available in either German or English)

Successful completion of the course is credited with **1 ECTS** as a key qualification for study progress.

Audience: For first semester bachelor students in one of the following majors: Informatics / Information Systems / Teaching Degree Program in Computer Science at KIT.

V

Tutorial for Guide to cruising through Informatics program of studies at KIT (eezi)

Tutorial (Tu)
Blended (On-Site/Online)

2411809, WS 24/25, SWS, Language: German/English, Open in study portal

Content

Tutorial for Guide to cruising through Informatics program of studies at KIT known as **eezi (**"easy") is recommended for all new bachelor students in the majors of Informatics / Information Systems / Teaching Degree Program in Informatics at KIT.

The focus of the tutorials is on helping students to help themselves in order to facilitate their transition into their major and building long-term strategies to effectively and successfully complete their studies.

Topics covered include: Time management, self-management, study management, stress management, study techniques, exam preparation, as well as tips to “How to survive the first semester” and “What do I need to do to manage my studies.”

The goal is to facilitate an eye level exchange between first semester students and students from a higher semester. The tutorial and tutor check-in meeting serves to answer students' questions about their studies and to assess their study situation. This includes reflecting on and evaluating their own progress, as well as discussing possible problems and successes.

The tutorial consists of 6 tutorials and 5 worksheets as well as a tutor check-in meeting. You can participate in the tutorial, but are not required to register for the credit point.

Students have the option of choosing either a tutorial in German or in English

T 3.229 Course: Handling Characteristics of Motor Vehicles I [T-MACH-105152]

Responsible: Dr.-Ing. Hans-Joachim Unrau
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2113807	Handling Characteristics of Motor Vehicles I	2 SWS	Lecture / 💻	Unrau
Exams					
WT 24/25	76-T-MACH-105152	Handling Characteristics of Motor Vehicles I			Unrau
ST 2025	76-T-MACH-105152	Handling Characteristics of Motor Vehicles I			Unrau

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

Assessment
Verbally

Duration: 30 up to 40 minutes

Auxiliary means: none

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

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

V Handling Characteristics of Motor Vehicles I

2113807, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Content
1. Problem definition: Control loop driver - vehicle - environment (e.g. coordinate systems, modes of motion of the car body and the wheels)

2. Simulation models: Creation from motion equations (method according to D'Alembert, method according to Lagrange, programme packages for automatically producing of simulation equations), model for handling characteristics (task, motion equations)

3. Tyre behavior: Basics, dry, wet and winter-smooth roadway

Learning Objectives:

The students know the basic connections between drivers, vehicles and environment. They can build up a vehicle simulation model, with which forces of inertia, aerodynamic forces and tyre forces as well as the appropriate moments are considered. They have proper knowledge in the area of tyre characteristics, since a special meaning comes to the tire behavior during driving dynamics simulation. Consequently they are ready to analyze the most importent influencing factors on the driving behaviour and to contribute to the optimization of the handling characteristics.

Organizational issues
Die Vorlesung wird als Videostream zur Verfügung gestellt. Sie finden den Videostream und das Vorlesungsmaterial auf ILIAS. Das ILIAS-Passwort erhalten Sie unter https://fast-web-01.fast.kit.edu/PasswoerterIlias/

Literature

1. Willumeit, H.-P.: Modelle und Modellierungsverfahren in der Fahrzeugdynamik,
B. G. Teubner Verlag, 1998

2. Mitschke, M./Wallentowitz, H.: Dynamik von Kraftfahrzeugen, Springer-Verlag, Berlin, 2004

3. Gnadler, R.; Unrau, H.-J.: Umdrucksammlung zur Vorlesung Fahreigenschaften von Kraftfahrzeugen I

T 3.230 Course: Handling Characteristics of Motor Vehicles II [T-MACH-105153]

Responsible: Dr.-Ing. Hans-Joachim Unrau
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2114838	Handling Characteristics of Motor Vehicles II	2 SWS	Lecture /	Unrau
Exams					
WT 24/25	76-T-MACH-105153	Handling Characteristics of Motor Vehicles II			Unrau
WT 24/25	76T-MACH-105153_wdh.	Handling Characteristics of Motor Vehicles II			Unrau
ST 2025	76-T-MACH-105153	Handling Characteristics of Motor Vehicles II			Unrau

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

Assessment
Oral Examination

Duration: 30 up to 40 minutes

Auxiliary means: none

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

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

V Handling Characteristics of Motor Vehicles II

Lecture (V)
Online

2114838, SS 2025, 2 SWS, Language: German, Open in study portal

Content
1. Vehicle handling: Bases, steady state cornering, steering input step, single sine, double track switching, slalom, cross-wind behavior, uneven roadway

2. stability behavior: Basics, stability conditions for single vehicles and for vehicles with trailer

Learning Objectives:

The students have an overview of common test methods, with which the handling of vehicles is gauged. They are able to interpret results of different stationary and transient testing methods. Apart from the methods, with which e.g. the driveability in curves or the transient behaviour from vehicles can be registered, also the influences from cross-wind and from uneven roadways on the handling characteristics are well known. They are familiar with the stability behavior from single vehicles and from vehicles with trailer. Consequently they are ready to judge the driving behaviour of vehicles and to change it by specific vehicle modifications.

Organizational issues
Die Vorlesung wird als Videostream zur Verfügung gestellt. Sie finden den Videostream und das Vorlesungsmaterial auf ILIAS. Das ILIAS-Passwort erhalten Sie unter https://fast-web-01.fast.kit.edu/PasswoerterIlias/

Literature

1. Zomotor, A.: Fahrwerktechnik: Fahrverhalten, Vogel Verlag, 1991

2. Mitschke, M./Wallentowitz, H.: Dynamik von Kraftfahrzeugen, Springer-Verlag, Berlin, 2004

3. Gnadler, R.; Unrau, H.-J.: Umdrucksammlung zur Vorlesung Fahreigenschaften von Kraftfahrzeugen II

T 3.231 Course: Heat Economy [T-WIWI-102695]

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each summer term	2

Events					
ST 2025	2581001	Heat Economy	2 SWS	Lecture / 🗣	Fichtner
Exams					
WT 24/25	7981001	Heat Economy			Fichtner
ST 2025	7981001	Heat Economy			Fichtner

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
The assessment consists of a written (60 minutes) or oral exam (30 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None.

Recommendations
None

Additional Information
See German version.

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

V **Heat Economy** — **Lecture (V) On-Site**
2581001, SS 2025, 2 SWS, Language: German, Open in study portal

Organizational issues
Block, Seminarraum Standort West - siehe Institutsaushang

T 3.232 Course: High Performance Powder Metallurgy Materials [T-MACH-102157]

Responsible: apl. Prof. Dr. Günter Schell
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2126749	Advanced powder metals	2 SWS	Lecture /	Schell
Exams					
WT 24/25	76-T-MACH-102157	High Performance Powder Metallurgy Materials			Schell, Wagner
ST 2025	76-T-MACH-102157	High Performance Powder Metallurgy Materials			Schell

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

Assessment
oral exam, 20- 30 min

Prerequisites
none

Workload
120 hours

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

V Advanced powder metals

2126749, SS 2025, 2 SWS, Language: German, Open in study portal

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

Literature

- W. Schatt ; K.-P. Wieters ; B. Kieback. ".Pulvermetallurgie: Technologien und Werkstoffe", Springer, 2007
- R.M. German. "Powder metallurgy and particulate materials processing. Metal Powder Industries Federation, 2005
- F. Thümmler, R. Oberacker. "Introduction to Powder Metallurgy", Institute of Materials, 1993

T 3.233 Course: High-Voltage Technology I [T-ETIT-101913]

Responsible: Dr.-Ing. Rainer Badent
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each winter term	1

Prerequisites
none

T 3.234 Course: High-Voltage Technology II [T-ETIT-101914]

Responsible: Dr.-Ing. Rainer Badent
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	1

Prerequisites
none

T 3.235 Course: High-Voltage Test Technique [T-ETIT-101915]

Responsible: Dr.-Ing. Rainer Badent
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2307392	High-Voltage Test Technique	2 SWS	Lecture / 🗣	Badent
WT 24/25	2307394	Tutorial for 2307392 High-Voltage Test Technique	2 SWS	Practice / 🗣	Gielnik
Exams					
WT 24/25	7307392	High-Voltage Test Technique			Badent
ST 2025	7307392	High-Voltage Test Technique			Badent

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

Prerequisites
none

T 3.236 Course: HR-Management 1: HR Strategies in the Age of AI [T-WIWI-113745]

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2573005	HR-Management 1: HR strategies in the age of AI	2 SWS	Lecture / 🗣	Nieken
WT 24/25	2573006	Übung zu HR-Management 1: HR Strategies in the age of AI	1 SWS	Practice / 🗣	Nieken, Mitarbeiter
Exams					
WT 24/25	7900200	HR-Management 1: HR strategies in the age of AI (formerly Human Resource Management)			Nieken
ST 2025	7900134	HR-Management 1: HR strategies in the age of AI (formerly Human Resource Management)			Nieken

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

Assessment
The assessment is conducted in the form of an oral (30 minutes) or written (60 minutes) examination (according to §4(2), 1 examination regulations). The exam is offered every semester and can be retaken at any regular examination date.

Prerequisites
None

Recommendations
Prior attendance of the Business Administration module is recommended.

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

V HR-Management 1: HR strategies in the age of AI

2573005, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

In this course, students will acquire fundamental knowledge in the field of human resource management and delve deeply into the future of work. We explore not only classical topics but also the significance of artificial intelligence in the workplace, along with selected aspects related to sustainability and shaping the future of work. Drawing from microeconomic and behavioral economic approaches, we analyze various processes and tools in human resource management. We evaluate their alignment with corporate strategy. We investigate how we can design workplaces sustainably while considering the individual needs of employees. In addition, we look at how AI is transforming our work environment and the opportunities and challenges it presents.

Going beyond theoretical concepts, we validate our insights using real-world data from research papers and current events. Discussions are strongly encouraged!

Learning Outcomes

The student

- understands the processes and instruments of human resource management.
- analyzes different methods and evaluates their usefulness with a special focus on AI.
- analyzes different processes and evaluates the strengths and weaknesses.
- understands the challenges of human resource management and its link to corporate strategy with a special focus on AI and sustainability aspects.
- posses knowledge about the applicability and challenges of different scientific research methods and open science.

Workload

The total workload for this course is approximately 135 hours.

Lecture: 32 hours

Preparation of lecture: 52 hours

Exam preparation: 51 hours

Literature

- Personalmanagement, Stock-Homburg, 2019
- Personnel Economics, Kuhn, 2017
- Research papers and case studies (will be provided during the lecture)

T 3.237 Course: HR-Management 2: Organization, Fairness & Leadership [T-WIWI-114178]

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2573001	HR-Management 2: Organization, Fairness & Leadership	2 SWS	Lecture / 🗣	Nieken
ST 2025	2573002	Übung zu HR-Management 2: Organization, Fairness & Leadership	1 SWS	Practice / 🗣	Nieken, Mitarbeiter, Gorny
Exams					
ST 2025	7900133	HR-Management 2: Organization, Fairness & Leadership (formerly Personnel Policies and Labor Market Institutions)			Nieken

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

Assessment
The assessment of this course is a written examination of 1 hour. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
In case of a small number of registrations, we might offer an oral exam instead of a written exam.

Prerequisites
None

Recommendations
Completion of module Business Administration is recommended.

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

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

V HR-Management 2: Organization, Fairness & Leadership

2573001, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
In the course, we explore central aspects of the working world. Students gain a deep understanding of the dynamics of wage and collective bargaining negotiations and critically engage with compensation structures within companies. A special focus lies in creating a sustainable workplace that meets both employees' needs and society's ecological and social demands. Additionally, we address topics related to diversity and inclusion. Students develop innovative approaches to leadership and new forms of work that are increasingly relevant in the modern work environment. Our analyses are based on microeconomic and behavioral economic approaches, evaluating their alignment with corporate strategy. We move beyond theoretical concepts, examining our insights using real-world data from research papers and current events. Discussions are explicitly encouraged!

Aim
The student

- understands the process and instruments of HR-Management with a focus on fair working conditions, sustainability, and leadership.
- analyzes various methods and evaluates their usefulness, particularly regarding fairness and leadership in organizations.
- analyzes various processes and assesses their strengths and weaknesses.
- evaluates the strengths and weaknesses of existing structures and regulations based on systematic criteria.
- possess knowledge about the applicability and challenges of different scientific research methods

Workload
The total workload for this course is approximately 135 hours.

Lecture 32 hours

Preparation of lecture 52 hours

Exam preparation 51 hours

Literature

- Arbeitsmarktökonomik, W. Franz, Springer, 2013
- The Nature of Leadership, Antonakis, J. Day, D. 2017

T 3.238 Course: Human Factors in Autonomous Driving [T-WIWI-113059]

Responsible: Prof. Dr. Alexey Vinel
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2511452	Human Factors in Autonomous Driving	2 SWS	Lecture /	Vinel, Bied, Schrapel
WT 24/25	2511453	Exercises Human Factors in Autonomous Driving	1 SWS	Practice /	Vinel, Bied, Schrapel
Exams					
WT 24/25	79AIFB_HFAD_C6	Human Factors in Autonomous Driving			Vinel
ST 2025	79AIFB_HFAD_C6	Human Factors in Autonomous Driving			Vinel

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

Assessment
The assessment of this course is a written examination (60 min) or an oral exam (20 min).

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

Workload
135 hours

T 3.239 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-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	3

Exams			
WT 24/25	79AIFB_HFSP_A1	Human Factors in Security and Privacy	Volkamer

Assessment
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (30 min) following §4, Abs. 2, 2 of the examination regulation. Only those who have successfully participated in the exercises and the lecture will be admitted to the examination.

Prerequisites
Both need to be done:

- Pass Quiz on Paper for Graphical Passwords
- Presentation of Results Exercise 2

+ 9 of the following 11 need to be done:

- Submit ILIAS certificate until Oct 24
- Pass Quiz on InfoSec Lecture
- Active participation exercise 1 Part 1 - Evaluation and analyses methods
- Pass Quiz Paper Discussion 1 - User Behaviour and motivation theories
- Active participation exercise 1 Part 2
- Pass Quiz Paper Discussion 2 - User Behaviour and motivation theories
- Pass Quiz Paper Discussion 3 - Security Awareness
- Active participation exercise 1 Part 3
- Pass Quiz Paper Discussion 4 - Graphical Authentication
- Pass Quiz Paper Discussion 5 - Shoulder Surfing Authentication
- Active participation exercise 2

Recommendations
The prior attendance of the lecture "Information Security" is strongly recommended.

Additional Information
The lecture will not be offered in winter semester 2020/21.

Some lectures are in English, some in German.

Workload
135 hours

T 3.240 Course: Human-Machine-Interaction [T-INFO-101266]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Written examination	6 CP	graded	Each summer term	3

Events					
ST 2025	24659	Human-Computer-Interaction	2 SWS	Lecture / 🏵	Beigl, Lee
Exams					
WT 24/25	7500076	Human-Machine-Interaction			Beigl
ST 2025	7500048	Human-Computer-Interaction			Beigl

Legend: 🖥 Online, 🏵 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 60 minutes.

Prerequisites
Participation in the exercise is compulsory and the contents of the exercise are relevant for the examination.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-INFO-106257 - Human-Machine-Interaction Pass must have been passed.

T 3.241 Course: Human-Machine-Interaction Pass [T-INFO-106257]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Coursework	0 CP	pass/fail	Each summer term	1

Events					
ST 2025	2400095	Human-Computer-Interaction	1 SWS	Practice /	Beigl, Lee
ST 2025	24659	Human-Computer-Interaction	2 SWS	Lecture /	Beigl, Lee
Exams					
ST 2025	7500121	Human-Machine-Interaction Pass			Beigl

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

Assessment
The assessment is carried out as an examination of another type (§ 4 Abs. 2 No. 3 SPO).

Exercise sheets must be handed in regularly to pass the course. The specific details will be announced in the lecture.

Prerequisites
None.

Additional Information
Participation in the exercise is compulsory and the contents of the exercise are relevant for the examination.

T 3.242 Course: Hydraulic Engineering and Water Management [T-BGU-101667]

Responsible: Prof. Dr. Mario Jorge Rodrigues Pereira da Franca
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	4 CP	graded	Each term	1 terms	1

Events					
WT 24/25	6200511	Hydraulic Engineering	2 SWS	Lecture / 🗣	Rodrigues Pereira da Franca
WT 24/25	6200512	Hydraulic Engineering - Excercise	1 SWS	Practice / 🗣	Seidel

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

Assessment
written exam with 60 minutes

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
120 hours

T 3.243 Course: Hydrology [T-BGU-101693]

Responsible: Prof. Dr.-Ing. Erwin Zehe
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	4 CP	graded	Each term	1 terms	2

Events					
WT 24/25	6200513	Hydrology	2 SWS	Lecture /	Zehe, Wienhöfer
WT 24/25	6200514	Tutorial Hydrology	1 SWS	Practice /	Zehe, Wienhöfer
Exams					
WT 24/25	8230101693	Hydrology			Wienhöfer, Zehe
ST 2025	8230101693	Hydrology			Wienhöfer, Zehe

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

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
120 hours

T 3.244 Course: I4.0 Systems Platform [T-MACH-106457]

Responsible: Dipl.-Ing. Thomas Maier
Prof. Dr.-Ing. Jivka Ovtcharova

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	4 CP	graded	Each term	3

Events					
WT 24/25	2123900	I4.0 Systems platform	4 SWS	Project (P / 🗣	Meyer, Rönnau, Maier
ST 2025	2123900	I4.0 Systems platform	4 SWS	Project (P / 🗣	Meyer, Maier
Exams					
WT 24/25	76-T-MACH-106457	I4.0 Systems platform			Meyer
ST 2025	76-T-MACH-106457	I4.0 Systems platform			Meyer

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

Assessment
Learning control is an examination of another type.
The overall impression is evaluated. The following partial aspects are included in the grading:

- Achievement of the project objective
- Final presentation including live demonstration
- Documentation of the project implementation

The grading scale will be announced in the course.

Prerequisites
None

Additional Information
Limited number of participants.

Workload
120 hours

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

V I4.0 Systems platform

2123900, WS 24/25, 4 SWS, Language: German, Open in study portal

Project (PRO)
On-Site

Content
Industry 4.0, IT systems for fabrication (e.g.: CAx, PDM, CAM, ERP, MES), process modelling and execution, project work in teams, practice-relevant I4.0 problems, in automation, manufacturing industry and service.

Students can

- describe the fundamental concepts, challenges, and objectives of Industrie 4.0 and name the essential terms in context of information management
- explain the necessary information flow between the different IT systems. They get practically knowledge about using current IT systems in context of I4.0, from order to production.
- map and analyze processes in the context of Industry 4.0 with special methods of process modelling
- collaboratively grasp practical I4.0 issues using existing hardware and software and work out solutions for a continuous improvement process in a team
- prototypically implement the self-developed solution proposal with the given IT systems and the existing hardware equipment and finally present the results

Organizational issues
Auftakt: Mi 23 Okt 10:00h - G20.20 (EG) R061

Literature
Keine / None

V **I4.0 Systems platform** **Project (PRO) On-Site**
2123900, SS 2025, 4 SWS, Language: German, Open in study portal

Content
Industry 4.0, IT systems for fabrication (e.g.: CAx, PDM, CAM, ERP, MES), process modelling and execution, project work in teams, practice-relevant I4.0 problems, in automation, manufacturing industry and service.

Students can

- describe the fundamental concepts, challenges, and objectives of Industrie 4.0 and name the essential terms in context of information management
- explain the necessary information flow between the different IT systems. They get practically knowledge about using current IT systems in context of I4.0, from order to production.
- map and analyze processes in the context of Industry 4.0 with special methods of process modelling
- collaboratively grasp practical I4.0 issues using existing hardware and software and work out solutions for a continuous improvement process in a team
- prototypically implement the self-developed solution proposal with the given IT systems and the existing hardware equipment and finally present the results

Organizational issues
Zeit und Ort siehe ILIAS

Literature
Keine / None

T 3.245 Course: Incentives in Organizations [T-WIWI-105781]

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2573003	Incentives in Organizations	2 SWS	Lecture / 🗣	Nieken
ST 2025	2573004	Übung zu Incentives in Organizations	2 SWS	Practice / 🗣	Nieken, Mitarbeiter, Walther, Gorny
Exams					
WT 24/25	7900201	Incentives in Organizations			Nieken
ST 2025	7900132	Incentives in Organizations			Nieken

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

Assessment
The assessment of this course is a written examination (60 min). The exam takesplace in every semester. Re-examinations are offered at every ordinaryexamination date. In case of a small number of registrations, we might offer an oral exam instead of a written exam.

Prerequisites
None

Recommendations
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 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The students acquire profound knowledge about the design and the impact of different incentive and compensation systems. Topics covered are, for instance, performance based compensation, team work, intrinsic motivation, multitasking, and subjective performance evaluations. We will use microeconomic or behavioral models as well as empirical data to analyze incentive systems. We will investigate several widely used compensation schemes and their relationship with corporate strategy. Students will learn to develop practical implications which are based on the acquired knowledge of this course.

Aim
The student

- develops a strategic understanding about incentives systems and how they work.
- analyzes models from personnel economics.
- understands how econometric methods can be used to analyze performance and compensation data.
- knows incentive schemes that are used in companies and is able to evaluate them critically.
- can develop practical implications which are based on theoretical models and empirical data from companies.
- understands the challenges of managing incentive and compensation systems and their relationship with corporate strategy.

Workload
The total workload for this course is: approximately 135 hours.

Lecture: 32 hours

Preparation of lecture: 52 hours

Exam preparation: 51 hours

Literature
Slides, Additional case studies and research papers will be announced in the lecture.

Literature (complementary):

Managerial Economics and Organizantional Architecture, Brickley / Smith / Zimmerman, McGraw-Hill Education, 2015

Behavioral Game Theory, Camerer, Russel Sage Foundation, 2003

Personnel Economics in Practice, Lazear / Gibbs, Wiley, 2014

Introduction to Econometrics, Wooldridge, Andover, 2014

Econometric Analysis of Cross Section and Panel Data, Wooldridge, MIT Press, 2010

T 3.246 Course: Industrial Organization [T-WIWI-102844]

Responsible: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	1

Exams			
WT 24/25	7910003	Industrial Organization	Reiß
ST 2025	7910002	Industrial Organization	Reiß

Assessment
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

Recommendations
Completion of the module Economics [WW1VWL] is assumed.

Additional Information
This course is not given in summer 2017.

T 3.247 Course: Information Engineering [T-MACH-102209]

Responsible: Prof. Dr.-Ing. Anne Meyer
Prof. Dr.-Ing. Jivka Ovtcharova

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	2

Events					
WT 24/25	2121355	Information Engineering	2 SWS	Seminar /	Meyer, Rönnau
ST 2025	2122014	Information Engineering	2 SWS	Seminar /	Meyer, Rönnau
Exams					
WT 24/25	76-T-MACH-102209	Information Engineering			Ovtcharova, Meyer
ST 2025	76-T-MACH-102209	Information Engineering			Meyer, Rönnau

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

Assessment
Alternative exam assessment (written composition and speech)

Prerequisites
None

Workload
90 hours

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

V Information Engineering

2121355, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Seminar papers on current research topics of the Institute for Information Management in Engineering. The respective topics are presented at the beginning of each semester.

Organizational issues
Ort und Zeit siehe ILIAS

Literature
Themenspezifische Literatur

V Information Engineering

2122014, SS 2025, 2 SWS, Language: German/English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Seminar papers on current research topics of the Institute for Information Management in Engineering. The respective topics are presented at the beginning of each semester.

Organizational issues
Zeit, Ort und weitere Informationen siehe ILIAS / Time, place and further information see ILIAS

Literature
Themenspezifische Literatur

T 3.248 Course: Information Management for Public Mobility Services [T-BGU-106608]

Responsible: Prof. Dr.-Ing. Peter Vortisch
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	3 CP	graded	Each winter term	1 terms	1

Events					
WT 24/25	6232905	Information Management for Public Mobility Services	2 SWS	Block / 🗣	Vortisch
Exams					
WT 24/25	8245106608	Information Management for Public Mobility Services			Vortisch

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

Assessment
lecture accompanying exercises, appr. 5 pieces

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
90 hours

T 3.249 Course: Information Service Engineering [T-WIWI-106423]

Responsible: Prof. Dr. Harald Sack
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	2

Events					
ST 2025	2511606	Information Service Engineering	2 SWS	Lecture / 🗣	Sack
ST 2025	2511607	Exercises to Information Service Engineering	1 SWS	Practice / 🗣	Sack, Norouzi, Tietz, Singh, Malekzadeh Mahani, Ondraszek
Exams					
WT 24/25	79AIFB_ISE_B2	Information Service Engineering			Sack
ST 2025	79AIFB_ISE_B3	Information Service Engineering (Registration until 21.07.2025)			Sack

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

Assessment
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

Workload
150 hours

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

V Information Service Engineering

2511606, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
- The Art of Understanding

- From Numbers to Insights
- Data, Information, and Knowledge
- Natural Language
- What is Successful Communication?
- The Art of Understanding

- Natural Language Processing

- NLP and Basic Linguistic Knowledge
- NLP Applications, Techniques and Challenges
- How to evaluate an NLP Experiment?
- Tokenization and Word Normalisation
- Statistical Language Models (N-Gram Model)
- Naive Bayes Text Classification
- Distributional Semantics and Word Vectors

- Knowledge Graphs

- Knowledge Representations and Ontologies
- Resource Description Framework (RDF)
- Modeling with RDFS
- Querying RDF(S) with SPARQL
- Popular Knowledge Graphs - Wikidata and DBpedia
- Ontologies with the Web Ontology Language (OWL)
- Linked Data Quality Assurance with SHACL
- From Linked Data to Knowledge Graphs

- Basic Machine Learning

- Machine Learning Fundamentals
- Evaluation and Generalization Problems
- Linear Regression
- Decision Trees
- Unsupervised Learning
- Neural Networks and Deep Learning
- Word Embeddings
- Knowledge Graph Embeddings

- ISE Applications

- Knowledge Graph Completion
- Knowledge Graphs and Large Language Models
- Semantic and Exploratory Search
- Semantic Recommender Systems

Learning objectives:

- The students know the fundamentals and measures of information theory and are able to apply those in the context of Information Service Engineering.
- The students have basic skills of natural language processing and are enabled to apply natural language processing technology to solve and evaluate simple text analysis tasks.
- The students have fundamental skills of knowledge representation with ontologies as well as basic knowledge of Semantic Web and Linked Data technologies. The students are able to apply these skills for simple representation and analysis tasks.
- The students have fundamental skills of information retrieval and are enabled to conduct and to evaluate simple information retrieval tasks.
- The students apply their skills of natural language processing, Linked Data engineering, and Information Retrieval to conduct and evaluate simple knowledge mining tasks.
- The students know the fundamentals of recommender systems as well as of semantic and exploratory search.

Literature

- D. Jurafsky, J.H. Martin, Speech and Language Processing, 2nd ed. Pearson Int., 2009.
- A. Hogan, The Web of Data, Springer, 2020.
- G. Rebala, A. Ravi, S. Churiwala, An Introduction to Machine Learning, Springer, 2019.

T 3.250 Course: Information Systems and Supply Chain Management [T-MACH-102128]

Responsible: Dr.-Ing. Christoph Kilger
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each summer term	3

Assessment
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.

Prerequisites
none

Workload
90 hours

T 3.251 Course: Infrastructure Management [T-BGU-106300]

Responsible: Dr.-Ing. Matthias Zimmermann
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	6 CP	graded	Each term	1 terms	1

Events					
ST 2025	6233801	Design and Construction of Roads	2 SWS	Lecture / 🗣	Zimmermann, Stelzenmüller
ST 2025	6233802	Operation and Maintenance of Roads	2 SWS	Lecture / 🗣	Zimmermann, Hess, Stelzenmüller
Exams					
WT 24/25	8245106300	Infrastructure Management			Zimmermann
ST 2025	8245106300	Infrastructure Management			Zimmermann

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

Assessment
written exam, 120 min.

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
180 hours

T 3.252 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each summer term	1

Events					
ST 2025	2545100	Innovation Management: Concepts, Strategies and Methods	2 SWS	Lecture /	Weissenberger-Eibl
Exams					
WT 24/25	7900145	Innovation Management: Concepts, Strategies and Methods			Weissenberger-Eibl
ST 2025	7900144	Innovation Management: Concepts, Strategies and Methods			Weissenberger-Eibl

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

Assessment
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

Recommendations
None

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

V Innovation Management: Concepts, Strategies and Methods

2545100, SS 2025, 2 SWS, Language: German, Open in study portal

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

Content
The course ‘Innovation Management: Concepts, Strategies and Methods’ offers scientific concepts which facilitate the understanding of the different phases of the innovation process and resulting strategies and appropriate methodologies suitable for application. The concepts refer to the entire innovation process so that an integrated perspective is made possible. This is the basis for the teaching of strategies and methods which fulfil the diverse demands of the complex innovation process. The course focuses particularly on the creation of interfaces between departments and between various actors in a company’s environment and the organisation of a company’s internal procedures. In this context a basic understanding of knowledge and communication is taught in addition to the specific characteristics of the respective actors. Subsequently methods are shown which are suitable for the profitable and innovation-led implementation of integrated knowledge.

Aim: Students develop a differentiated understanding of the different phases and concepts of the innovation process, different strategies and methods in innovation management.

Organizational issues
Wichtig! Bitte treten Sie dem **ILIAS-Kurs zur Vorlesung** bei, damit wir Ihnen weitere Informationen mitteilen können.

Literature
Eine ausführliche Literaturliste wird mit den Vorlesungsunterlagen zur Verfügung gestellt.

Eine Einführung bei: Vahs,D./Brem,A. (2013): Innovationsmanagement. Von der Idee zur erfolgreichen Vermarktung, 4. Auflage, Stuttgart 2013.

T 3.253 Course: Innovation2Business – Innovation Strategy in the Industrial Corporate Practice [T-MACH-112882]

Responsible: Prof. Dr.-Ing. Albert Albers
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	4 CP	graded	Each winter term	1 terms	1

Events					
WT 24/25	2145182	Innovation2Business – Innovation Strategy in the Industrial Corporate Practice	2 SWS	Lecture / 🗣	Albers
Exams					
WT 24/25	76-T-MACH-112882	Innovation2Business – innovation strategy in the industrial corporate practice			Albers

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

Assessment
Written exam based on the lecture handout and materials, duration 90 minutes

Prerequisites
none

Recommendations
None

Additional Information
The course is offered in German.

Workload
120 hours

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

V Innovation2Business – Innovation Strategy in the Industrial Corporate Practice

Lecture (V) On-Site

2145182, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Content
lecture block at the Bühl & Herzogenaurach locations with plant tours & fireside evenings + exam-preparatory Q&A.
Exam: written, limited to 30 seats (recommended for: Master's degree; mechanical engineering, industrial engineering, electrical engineering, computer science) → see module manual for details.
In this lecture series, use Schaeffler as an example to learn how global companies continuously transform themselves to grow sustainably and become
maintain a leading position in the global market in the long term through business-oriented innovation.
Together we will go through the most important elements of the innovation and development process and learn about the successes and learnings based on
vivid examples from practice.
Join the fireside evenings with the speakers to discuss the lecture content and beyond in a relaxed atmosphere.
The event is limited to 30 students and is free for you (meals, bus transfers & accommodations).

Organizational issues
Vorlesung findet an Schaeffler-Standorten (Herzogenaurach und Bühl) statt.

Sprache: Unterlagen Englisch, Vortragssprache Deutsch

T 3.254 Course: Insurance Risk Management [T-WIWI-102636]

Responsible: Harald Maser
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	2,5 CP	graded	Each summer term	1

Assessment
The assessment consists of a written or an oral exam (according to Section 4 (2), 1 or 2 of the examination regulation).

T-WIWI-102636 Insurance Risk Management will be offered as a seminar starting summer term 2017. The examination will be offered latest until summer term 2017 (beginners only).

Prerequisites
None

Recommendations
None

Additional Information
Block course. For organizational reasons, please register with the secretary of the chair: thomas.mueller3@kit.edu.

T 3.255 Course: Integrated Product Development [T-MACH-105401]

Responsible: Prof. Dr.-Ing. Albert Albers
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	16 CP	graded	Each winter term	3

Events					
WT 24/25	2145156	Lecture: IP – Integrated Product Development	4 SWS	Lecture / 🗣	Albers
WT 24/25	2145157	Workshop: IP – Integrated Product Development	4 SWS	Practice / 🗣	Albers
WT 24/25	2145300	Project Work: IP - Integrated Product Development	2 SWS	Others (sons / 🗣	Albers
Exams					
WT 24/25	76-T-MACH-105401	Integrated Product Development			Albers

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

Assessment
oral examination (approx. 60 minutes)

Prerequisites
none

Additional Information
Due to organizational reasons, the number of participants is limited. Thus a selection has to be made. For registration to the selection process a standard form has to be used, that can be downloaded from IPEK hompage from April to July. The selection itself is made by the course's responsible in personal interviews. The criterion for selection is the progress of studies. In the event of equal progress, the decision is made by lot.

The course is offered in German.

Workload
480 hours

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

V Lecture: IP – Integrated Product Development

2145156, WS 24/25, 4 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Registration required in the previous summer semester. The lecture starts in first week of October.

Prerequisites:

The participation in "Integrated Product Development" requires the concurrent participation in lectures (2145156), tutorials (2145157) and project work (2145300).

Due to organizational reasons, the number of participants is limited. Thus a selection has to be made. For registration to the selection process a standard form has to be used, that can be downloaded from IPEK hompage from april to july. The selection itself is made by Prof. Albers in personal interviews.

Recommendations:

none

Workload:

regular attendance: 84 h

self-study: 288 h

Examination:

oral examination (60 minutes)

combined examination of lectures, tutorials and project work

Course content:

organizational integration: integrated product engineering model, core team management and simultaneous engineering

informational integration: innovation management, cost management, quality management and knowledge management

personal integration: team coaching and leadership management

invited lectures

Learning objectives:

The Students are able to ...

- analyze and evaluate product development processes based on examples and their own experiences.
- plan, control and evaluate the working process systematically.
- choose and use suitable methods of product development, system analysis and innovation management under consideration of the particular situation.
- prove their results.
- develop complex technical solutions in a team and to present them to qualified persons as well as non-qualified persons
- to design overall product development processes under consideration of market-, customer- and company- aspects

Literature
Klaus Ehrlenspiel - Integrierte Produktentwicklung. Denkabläufe, Methodeneinsatz, Zusammenarbeit, Hanser Verlag, 2009

V **Workshop: IP – Integrated Product Development** **Practice (Ü) On-Site**
2145157, WS 24/25, 4 SWS, Language: German, Open in study portal

Content
Prerequisites:

The participation in "Integrated Product Development" requires the concurrent participation in lectures (2145156), tutorials (2145157) and project work (2145300).

Due to organizational reasons, the number of participants is limited to 42 persons. Thus a selection has to be made. For registration to the selection process a standard form has to be used, that can be downloaded from IPEK hompage from april to july. The selection itself is made by Prof. Albers in personal interviews.

Recommendations:

none

Workload:

regular attendance: 84 h

self-study: 288 h

Examination:

lectures: 21 h

preparation to exam: 99 h

Course content:

problem solving: analysis techniques, creativity techniques and evaluation methods

professional skills: presentation techniques, moderation and teamcoaching

development tools: MS Project, Szenario-Manager & Pro/Engineer Wildfire

Learning objectives:

The theoretical background taught in the lecture, is deepened through methodworkshops, business games and case studies. The reflexion of the onself precedure allows for an applicability and practicability of the contents in the accompnying development project as well as for the career entry.

Literature

Klaus Ehrlenspiel - Integrierte Produktentwicklung. Denkabläufe, Methodeneinsatz, Zusammenarbeit, Hanser Verlag, 2009

V **Project Work: IP - Integrated Product Development** **Others (sonst.)**
2145300, WS 24/25, 2 SWS, Language: German, Open in study portal **On-Site**

Content
Participation only possible in combination with the lecture 2145156 'Integrated Product Development'.

Prerequisites:

The participation in "Integrated Product Development" requires the concurrent participation in lectures (2145156), tutorials (2145157) and project work (2145300).

Due to organizational reasons, the number of participants is limited to 42 persons. Thus a selection has to be made. For registration to the selection process a standard form has to be used, that can be downloaded from IPEK hompage from april to july. The selection itself is made by Prof. Albers in personal interviews.

Recommendations:

none

Workload:

regular attendance: 21 h

self-study: 99 h

Examination:

oral examination (60 minutes)

combined examination of lectures, tutorials and project work

Course content:

The project work begins with the early stages of product development, i.e. the identification of market trends and needs. Based on this information the students develop scenarios for future markets and create product profiles, which describe the customers and their demands without anticipating possible product solutions. After having passed several following milestones for ideas, concepts and designs, virtual prototypes and function prototypes are presented to an audience.
The project work is supported by coaching through skilled faculty staff. Additionally weekly tutorials, respectively workshops are given. For doing the project the teams gain access to team workspaces featuring IT-infrastructure and relevant software, such as office, CAD or FEA. Further on the teams learn how team cooperation and knowledge management can be supported in design project by using a wiki system.s

Learning objectives:

The center of "Integrated Product Development" constitutes itself in the development of a technical product within independent working student teams on the basis of the market situation up to virtual and real prototypes. Thereby the integrate treatment of the product development process is of importance. The project teams hereby represent development departments of medium sized companies, in which the presented methods and tools are field - experienced applied and ideas are transformed into concrete product models.
For the preparation of this development project the basics of 3D-CAD-modelling (Pro/ENGINEER) as well as different tools and methods of creative designing, of sketching and solution finding are mediated in workshops. Special events impart an insight of presentation techniques and the meaning of technical design.

T 3.256 Course: Integrated Production Planning in the Age of Industry 4.0 [T-MACH-109054]

Responsible: Prof. Dr.-Ing. Gisela Lanza
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	9 CP	graded	Each summer term	1

Events					
ST 2025	2150660	Integrated Production Planning in the Age of Industry 4.0	6 SWS	Lecture / Practice (/ 🗣	Lanza
Exams					
WT 24/25	76-T-MACH-109054	Integrated Production Planning in the Age of Industry 4.0			Lanza
ST 2025	76-T-MACH-109054	Integrated Production Planning in the Age of Industry 4.0			Lanza

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

Assessment
Written Exam (120 min)

Prerequisites
"T-MACH-108849 - Integrierte Produktionsplanung im Zeitalter von Industrie 4.0" as well as "T-MACH-102106 Integrierte Produktionsplanung" must not be commenced.

Additional Information
The course is offered in German.

Workload
270 hours

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

V Integrated Production Planning in the Age of Industry 4.0

2150660, SS 2025, 6 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
Integrated Production Planning in the age of Industry 4.0 will be taught in the context of this engineering science lecture. In addition to a comprehensive introduction to Industry 4.0, the following topics will be addressed at the beginning of the lecture:

- Basics, history and temporal development of production
- Integrated production planning and integrated digital engineering
- Principles of integrated production systems and further development with Industry 4.0

Building on this, the phases of integrated production planning are taught in accordance with VDI Guideline 5200, whereby special features of parts production and assembly are dealt with in the context of case studies:

- Factory planning system
- Definition of objectives
- Data collection and analysis
- Concept planning (structural development, structural dimensioning and rough layout)
- Detailed planning (PPS, process simulation as a validation tool, planning of conveyor technology and storage systems for linking production and IT systems in the I4.0 factory)
- Preparation and monitoring of implementation
- Start-up and series support

The lecture contents are complemented by numerous current practical examples with a strong Industry 4.0 reference. Aspects of sustainability are anchored in all units and thus basic knowledge of sustainable production planning is taught. Within the exercises the lecture contents are deepened and applied to specific problems and tasks.

Learning Outcomes:
The students …

- can discuss basic questions of production technology.
- are able to apply the methods of integrated production planning to new problems.
- are able to analyze and evaluate the suitability of the methods, procedures and techniques for a specific problem.
- can apply the learned methods of integrated production planning to new problems.
- can use their knowledge targeted for efficient production technology.
- know the basic features of sustainable production planning and can apply underlying knowledge.

Workload:

MACH:
regular attendance: 63 hours
self-study: 177 hours
WING:
regular attendance: 63 hours
self-study: 207 hours

Organizational issues
Vorlesungstermine dienstags 14.00 Uhr und donnerstags 14.00 Uhr, Übungstermine donnerstags 15.45 Uhr. Bekanntgabe der konkreten Übungstermine erfolgt in der ersten Vorlesung

Literature
Medien:
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.257 Course: Integrative Strategies in Production and Development of High Performance Cars [T-MACH-105188]

Responsible: Karl-Hubert Schlichtenmayer
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2150601	Integrative Strategies in Production and Development of High Performance Cars	2 SWS	Lecture / 🗣	Schlichtenmayer
Exams					
WT 24/25	76-T-MACH-105188	Integrative Strategies in Production and Development of High Performance Cars			Schlichtenmayer
ST 2025	76-T-MACH-105188	Integrative Strategies in Production and Development of High Performance Cars			Schlichtenmayer

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

Assessment
Written Exam (60 min)

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

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

V Integrative Strategies in Production and Development of High Performance Cars

Lecture (V) On-Site

2150601, SS 2025, 2 SWS, Language: German, Open in study portal

Content
The lecture deals with the technical and organizational aspects of integrated development and production of sports cars on the example of Porsche AG. The lecture begins with an introduction and discussion of social trends. The deepening of standardized development processes in the automotive practice and current development strategies follow. The management of complex development projects is a first focus of the lecture. The complex interlinkage between development, production and purchasing are a second focus. Methods of analysis of technological core competencies complement the lecture. The course is strongly oriented towards the practice and is provided with many current examples.

The main topics are:

- Introduction to social trends towards high performance cars
- Automotive Production Processes
- Integrative R&D strategies and holistic capacity management
- Management of complex projects
- Interlinkage between R&D, production and purchasing
- The modern role of manufacturing from a R&D perspective
- Global R&D and production
- Methods to identify core competencies

Learning Outcomes:

The students …

- are capable to specify the current technological and social challenges in automotive industry.
- are qualified to identify interlinkages between development processes and production systems.
- are able to explain challenges and solutions of global markets and global production of premium products.
- are able to explain modern methods to identify key competences of producing companies.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Literature
Medien:
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.258 Course: Intellectual Property Rights and Strategies in Industrial Companies [T-MACH-105442]

Responsible: Dipl.-Ing. Frank Zacharias
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each term	1

Events					
WT 24/25	2147161	Intellectual Property Rights and Strategies in Industrial Companies	2 SWS	Block / 🗣	Zacharias
ST 2025	2147160	Patents and Patentstrategies in innovative companies	2 SWS	/ 🗣	Zacharias
Exams					
WT 24/25	76-T-MACH-105442	Intellectual Property Rights and Strategies in Industrial Companies			Zacharias, Albers
ST 2025	76-T-MACH-105442	Intellectual Property Rights and Strategies in Industrial Companies			Zacharias

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

Assessment
oral exam (ca. 20 min)

Prerequisites
none

Recommendations
None

Additional Information
The course is offered in German.

Workload
120 hours

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

V Intellectual Property Rights and Strategies in Industrial Companies

2147161, WS 24/25, 2 SWS, Language: German, Open in study portal

Block (B)
On-Site

Content
Attendance at lectures (5 L): 24h

Personal preparation and follow-up of lecture and exercise: 5h

Preparation exam: 31h

The students understand and are able to describe the basics of intellectual property, particularly with regard to the filing and obtaining of property rights. They can name the criteria of project-integrated intellectual property management and strategic patenting in innovative companies. Students are also able to describe the key regulations of the law regarding employee invention and to illustrate the challenges of intellectual properties with reference to examples.

The lecture will describe the requirements to be fulfilled and how protection is obtained for patents, design rights and trademarks, with a particular focus on Germany, Europe and the EU. Active, project-integrated intellectual property management and the use of strategic patenting by technologically oriented companies will also be discussed. Furthermore, the significance of innovations and intellectual property for both business and industry will be demonstrated using practical examples, before going on to consider the international challenges posed by intellectual

property and current trends in the sector. Within the context of licensing and infringement, insight will be provided as to the relevance of communication, professional negotiations and dispute resolution procedures, such as mediation for example. The final item on the agenda will cover those aspects of corporate law that are relevant to intellectual property.

Lecture overview:

1. Introduction to intellectual property
2. The profession of the patent attorney
3. Filing and obtaining intellectual property rights
4. Patent literature as a source of knowledge and information
5. The law regarding employee inventions
6. Active, project-integrated intellectual property management
7. Strategic patenting
8. The significance of intellectual property
9. International challenges and trends
10. Professional negotiations and dispute resolution procedures
11. Aspects of corporate law

Organizational issues
Weitere Informationen siehe IPEK-Homepage.

https://www.ipek.kit.edu/2976_2858.php

V **Patents and Patentstrategies in innovative companies**
2147160, SS 2025, 2 SWS, Language: German, Open in study portal **On-Site**

Content

Attendance at lectures (5 L): 24h

Personal preparation and follow-up of lecture and exercise: 5h

Preparation exam: 31h

The students understand and are able to describe the basics of intellectual property, particularly with regard to the filing and obtaining of property rights. They can name the criteria of project-integrated intellectual property management and strategic patenting in innovative companies. Students are also able to describe the key regulations of the law regarding employee invention and to illustrate the challenges of intellectual properties with reference to examples.

The lecture will describe the requirements to be fulfilled and how protection is obtained for patents, design rights and trademarks, with a particular focus on Germany, Europe and the EU. Active, project-integrated intellectual property management and the use of strategic patenting by technologically oriented companies will also be discussed. Furthermore, the significance of innovations and intellectual property for both business and industry will be demonstrated using practical examples, before going on to consider the international challenges posed by intellectual

property and current trends in the sector. Within the context of licensing and infringement, insight will be provided as to the relevance of communication, professional negotiations and dispute resolution procedures, such as mediation for example. The final item on the agenda will cover those aspects of corporate law that are relevant to intellectual property.

Lecture overview:

1. Introduction to intellectual property
2. The profession of the patent attorney
3. Filing and obtaining intellectual property rights
4. Patent literature as a source of knowledge and information
5. The law regarding employee inventions
6. Active, project-integrated intellectual property management
7. Strategic patenting
8. The significance of intellectual property
9. International challenges and trends
10. Professional negotiations and dispute resolution procedures
11. Aspects of corporate law

T 3.259 Course: Intelligent Agent Architectures [T-WIWI-111267]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2540525	Intelligent Agent Architectures	2 SWS	Lecture / 🗣	Geyer-Schulz
WT 24/25	2540526	Übung zu Intelligent Agent Architectures	1 SWS	Practice / 🗣	Geyer-Schulz, Bell
Exams					
WT 24/25	79011480	Intelligent Agent Architectures (WS 2024/2025)			Geyer-Schulz
ST 2025	7900069	Intelligent Agent Architectures (Nachklausur WS 2024/2025)			Geyer-Schulz

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

Assessment
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

Recommendations
It is recommended to additionally review the Bachelor-level lecture "Customer Relationship Management" from the module "CRM and Servicemanagement".

Workload
135 hours

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

V Intelligent Agent Architectures

2540525, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Course content:

The lecture is structured in three parts:

In the first part the methods used for architecture design are introduced (system analysis, UML, formal specification of interfaces, software and analysis patterns, and the separation in conceptual and IT-architectures. The second part is dedicated to learning architectures and machine learning methods. The third part presents examples of learning CRM-Architectures.

Workload:

The total workload for this course is approximately 135 hours (4.5 credits):

Time of attendance

- Attending the lecture: 15 x 90min = 22h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m
- Examination: 1h 00m

Self-study

- Preparation and wrap-up of the lecture: 15 x 180min = 45h 00m
- Preparing the exercises: 25h 00m
- Preparation of the examination: 31h 00m

Sum: 135h 00m

Learning Goals:

Students have special knowledge of software architectures and of the methods which are used in their development (Systems analysis, formal methods for the specification of interfaces and algebraic semantic, UML, and, last but not least, the mapping of conceptual architectures to IT architectures.

Students know important architectural patterns and they can – based on their CRM knowledge – combine these patterns for innovative CRM applications.

Assessment:

The assessment consists of a written exam of 1-hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation.

The course is considered successfully taken if at least 50 out of 100 points are acquired in the written exam. In this case, all additional points (up to 10) from exercise work will be added.

Grade: Minimum points

- 1,0: 95
- 1,3: 90
- 1,7: 85
- 2,0: 80
- 2,3: 75
- 2,7: 70
- 3,0: 65
- 3,3: 60
- 3,7: 55
- 4,0: 50
- 5,0: 0

Literature

- P. Clements *u. a.*, *Documenting Software Architectures. Views and Beyond*. Upper Saddle River: Addison-Wesley, 2011.
- Fowler, *Patterns of Enterprise Application Architecture*. Amsterdam: Addison-Wesley Longman, 2002.
- S. Russell und P. Norvig, *Artificial Intelligence: A Modern Approach*, 3. Aufl. Harlow Essex England: Pearson New International Edition, 2014.
- V. N. Vapnik, *The Nature of Statistical Learning Theory*. New York: Springer, 1995.

T 3.260 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2540537	Intelligent Agents and Decision Theory	2 SWS	Lecture	Geyer-Schulz
ST 2025	2540538	Übung zu Intelligent Agents and Decision Theory	1 SWS	Practice	Bell
Exams					
WT 24/25	7900294	Intelligent Agents and Decision Theory (Nachklausur SoSe 2024)			Geyer-Schulz
ST 2025	7900306	Intelligent Agents and Decision Theory			Geyer-Schulz

Assessment
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

Recommendations
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.

Workload
135 hours

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

V Intelligent Agents and Decision Theory

2540537, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)

Content
The key assumption of this lecture is that the concept of artificial intelligence is inseparably linked to the economic concept of rationality of agents. We consider different classes of decision problems - decisions under certainty, risk and uncertainty - from an economic, managerial and AI-engineering perspective:

From an economic point of view, we analyze how to act rationally in these situations based on classic utility theory. In this regard, the course also introduces the relevant parts of decision theory for dealing with

- multiple conflicting objectives,
- incomplete, risky and uncertain information about the world,
- assessing utility functions, and
- quantifying the value of information ...

From an engineering perspective, we discuss how to develop practical solutions for these decision problems, using appropriate AI components. We introduce

- a general, agent-based design framework for AI systems,

as well as AI methods from the fields of

- search (for decisions under certainty),
- inference (for decions under risk) and
- learning (for decisions under uncertainty).

Where applicable, the course highlights the theoretical ties of these methods with decision theory.

We conclude with a discussion of ethical and philosophical issues concerning the development and use of AI.

Learning objectives

Students are able to design, analyze, implement, and evaluate intelligent agents.

Lecture Outline

1. Introduction: Artificial intelligence and the economic concept of rationality
2. Intelligent Agents: A general, agent-based design framework for AI systems
3. Decision under certainty: Assessing utility functions for decisions with multiple objectives
4. Search: Linear programming for decisions under certainty
5. Decisions under risk: The expected utility principle
6. Information systems: Improving economic decisions under risk
7. Inference: Bayesian networks for decisions under risk
8. Learning: Bayesian Networks (Basics)
9. Learning: Bayesian Networks (Algorithms I)
10. Learning: Bayesian Networks (Algorithms II)

Note: This rough outline may be subject to change.

Literature
Bamberg, Coenenberg & Krapp (2019). Betriebswirtschaftliche Entscheidungslehre (16th ed.). Verlag Franz Vahlen GmbH.

Fishburn (1988). Nonlinear preference and utility theory. Baltimore: Johns Hopkins University Press.

Keeney & Raiffa (1993). Decisions with multiple objectives: preferences and value trade-offs. Cambridge University Press.

Nickel, S., Stein, O., & Waldmann, K.-H. (2014). Operations Research (2nd ed.). Springer Berlin Heidelberg.

Russell & Norvig (2016). Artificial Intelligence: A Modern Approach (3rd Global Edition). Pearson.

Koller, D., & Friedman, N. (2009). Probabilistic graphical models: principles and techniques. MIT Press.

Sutton & Barto (2018). Reinforcement learning: An introduction. Cambridge: MIT press.

T 3.261 Course: Interdisciplinary Approach to Verifiable e-Voting [T-WIWI-108716]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	2

Assessment
Lecture and examination will no longer be offered from winter semester 2019/2020.

Prerequisites
None.

Additional Information
The lecture will not be held in the summer semester 2019.

Workload
120 hours

T 3.262 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	6 CP	graded	see Annotations	1

Events					
WT 24/25	2572189	International Business Development and Sales	4 SWS	Block / 🗣	Klarmann, Terzidis, Schmitt
Exams					
WT 24/25	7900156	International Business Development and Sales			Klarmann, Terzidis

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

Assessment
Non exam assessment. The grade is based on the presentation, the subsequent discussion and the written elaboration.

Additional Information
Please contact the Marketing and Sales Research Group for further information.

Workload
180 hours

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

V International Business Development and Sales

2572189, WS 24/25, 4 SWS, Language: English, Open in study portal

Block (B)
On-Site

Content
This course is offered as part of the EUCOR programme in cooperation with EM Strasbourg. Max. 10 students of KIT and max. 10 students of EM Strasbourg will develop a sales presentation in tandems (teams of 2). This is based on the value proposition of a business model.

- An application is required to participate in this event. The application phase usually takes place at the beginning of the lecture period. Further information on the application process can be found on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the start of the lecture period.

Total workload for 6 ECTS: about 180 hours.

T 3.263 Course: International Concepts of Water Technologies [T-CIWVT-103704]

Responsible: Prof. Dr. Andrea Schäfer
Organisation: KIT Department of Chemical and Process Engineering
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Version
Examination of another type	5 CP	graded	1

T 3.264 Course: International Finance [T-WIWI-102646]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	see Annotations	1

Events					
ST 2025	2530570	International Finance	2 SWS	Lecture / 🗣	Walter, Uhrig-Homburg
Exams					
WT 24/25	7900052	International Finance			Uhrig-Homburg
ST 2025	7900097	International Finance			Uhrig-Homburg

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

Assessment
The success control takes place in form of a written examination (60 min). If the number of participants is low, an oral examination may also be offered. The examination is offered every semester and can be repeated at any regular examination date.

Prerequisites
None

Recommendations
None

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

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

V International Finance

2530570, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Organizational issues
Kickoff am Mittwoch, 30.04.25, 16:00 - 19:15 Uhr im Raum 320 im Geb. 09.21 (Blücherstr. 17). Die Veranstaltung wird samstags als Blockveranstaltung angeboten (nach dem Kickoff 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 3.265 Course: International Marketing [T-WIWI-102807]

Responsible: Dr. Sven Feurer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	1,5 CP	graded	see Annotations	1

Assessment
The examination will be open to first-time writers for the last time in the 2021 summer semester.

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Additional Information
The course "International Marketing" will be offered for the last time in winter semester 2020/21.
For further information please contact the Marketing & Sales Research Group (marketing.iism.kit.edu).

T 3.266 Course: Internet Law [T-INFO-101307]

Responsible: N.N.
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	2

Events					
WT 24/25	2424354	Internet Law	2 SWS	Lecture / 🏵	Sattler
Exams					
WT 24/25	7500060	Internet Law			Sattler
ST 2025	7500057	Internet Law			Sattler

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

Assessment
The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 120 minutes.

Prerequisites
The course **Ausgewählte Rechtsfragen des Internetrechts T-INFO-108462** may not have started.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-INFO-108462 - Selected Legal Issues of Internet Law must not have been started.

Recommendations
None.

Additional Information
Lecture (with written exam) **Internet Law** T-INFO-101307 is offered in the winter semester.

Colloquium (other type of examination) **Selected Legal Issues in Internet Law** T-INFO-108462 is offered in the summer semester.

T 3.267 Course: Internet of Everything [T-INFO-101337]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2424104	Internet of Everything	2 SWS	Lecture / 🗣	Zitterbart, Mahrt, Neumeister, Hildenbrand
Exams					
WT 24/25	7500009	Internet of Everything			Zitterbart
ST 2025	7500071	Internet of Everything			Zitterbart

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

Assessment
The assessment is carried out as an oral examination (§ 4 Abs. 2 Nr. 2 SPO) lasting 20 minutes.

Depending on the number of participants, it will be announced six weeks before the examination (Section 6 (3) SPO) whether the assessment will take the form of an oral examination of approx.

- in the form of an oral examination of approx. 30 minutes in accordance with § 4 Para. 2 No. 2 SPO or

- in the form of a written examination in accordance with § 4 Para. 2 No. 1 SPO

takes place.

Prerequisites
None.

Recommendations
The contents of the lecture Introduction to Computer Networks are assumed to be known. Attendance of the lecture Telematics is strongly recommended, as the contents are an important basis for understanding and classifying the material.

T 3.268 Course: Introduction to Bionics [T-MACH-111807]

Responsible: apl. Prof. Dr. Hendrik Hölscher
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	3

Events					
ST 2025	2142151	Introduction to Biomimetics	2 SWS	Lecture / 🗣	Hölscher, Greiner
Exams					
WT 24/25	76-T-MACH-102172	Introduction into Biomimetics			Hölscher
ST 2025	76-T-MACH-102172	Introduction into Biomimetics			Hölscher

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

Assessment
written exam (duration: 60 minutes)

Prerequisites
none

Additional Information
Brick T-MACH-102172 may not be started

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

V Introduction to Biomimetics

2142151, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Bionics focuses on the design of technical products following the example of nature. For this purpose we have to learn from nature and to understand its basic design rules. Therefore, the lecture focuses on the analysis of the fascinating effects used by many plants and animals. Possible implementations into technical products are discussed in the end.

The students should be able analyze, judge, plan and develop biomimetic strategies and products.

Basic knowledge in physics and chemistry

The successfull attandence of the lecture is controlled by a written examination.

Organizational issues
Im ILIAS werden Materialien (Videos, Originalliteratur, Übungen) zur Vertiefung zur Verfügung gestellt.

Für die schriftliche Klausur werden zwei Termine angeboten (erste Woche nach Vorlesungsende im Sommersemester und eine Woche vor Vorlesungsbeginn im Wintersemester).

Literature
Folien und Literatur werden in ILIAS zur Verfügung gestellt.

T 3.269 Course: Introduction to Ceramics [T-MACH-100287]

Responsible: apl. Prof. Dr. Günter Schell
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	6 CP	graded	Each winter term	1

Events					
WT 24/25	2125757	Introduction to Ceramics	3 SWS	Lecture /	Schell
Exams					
WT 24/25	76-T-MACH-100287	Introduction to Ceramics			Schell, Bucharsky, Wagner
ST 2025	76-T-MACH-100287	Introduction to Ceramics			Schell, Bucharsky, Wagner

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

Assessment
The assessment consists of an oral exam (30 min) taking place at a specific date.

The re-examination is offered at a specific date.

Prerequisites
None

Workload
180 hours

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

V Introduction to Ceramics

2125757, WS 24/25, 3 SWS, Language: German, Open in study portal

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

Literature

- H. Salmang, H. Scholze, "Keramik", Springer
- Kingery, Bowen, Uhlmann, "Introduction To Ceramics", Wiley
- Y.-M. Chiang, D. Birnie III and W.D. Kingery, "Physical Ceramics", Wiley
- S.J.L. Kang, "Sintering, Densification, Grain Growth & Microstructure", Elsevier

T 3.270 Course: Introduction to Energy Economics [T-WIWI-102746]

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	5,5 CP	graded	Each summer term	7

Events					
ST 2025	2581010	Introduction to Energy Economics	2 SWS	Lecture / 🗣	Fichtner
ST 2025	2581011	Übungen zu Einführung in die Energiewirtschaft	2 SWS	Practice / 🗣	Sandmeier, Fichtner
Exams					
WT 24/25	7981010	Introduction to Energy Economics			Fichtner
ST 2025	7981010	Introduction to Energy Economics			Fichtner

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

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

Prerequisites
None.

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

V Introduction to Energy Economics

2581010, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

1. Introduction: terms, units, conversions
2. The energy carrier gas (reserves, resources, technologies)
3. The energy carrier oil (reserves, resources, technologies)
4. The energy carrier hard coal (reserves, resources, technologies)
5. The energy carrier lignite (reserves, resources, technologies)
6. The energy carrier uranium (reserves, resources, technologies)
7. The final carrier source electricity
8. The final carrier source heat
9. Other final energy carriers (cooling energy, hydrogen, compressed air)

The student is able to

- characterize and judge the different energy carriers and their peculiarities,
- understand contexts related to energy economics.

Literature
Weiterführende Literatur:

Pfaffenberger, Wolfgang. Energiewirtschaft. ISBN 3-486-24315-2

Feess, Eberhard. Umweltökonomie und Umweltpolitik. ISBN 3-8006-2187-8

Müller, Leonhard. Handbuch der Elektrizitätswirtschaft. ISBN 3-540-67637-6

Stoft, Steven. Power System Economics. ISBN 0-471-15040-1

Erdmann, Georg. Energieökonomik. ISBN 3-7281-2135-5

T 3.271 Course: Introduction to Engineering Geology [T-BGU-101500]

Responsible: Prof. Dr. Philipp Blum
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each winter term	1

Events					
WT 24/25	6339057	Introduction to Engineering Geology	4 SWS	Lecture / Practice (	Blum, Fuchs, Menberg
Exams					
WT 24/25	8210_101500	Introduction to Engineering Geology			Blum
ST 2025	8210_0100016	Introduction to Engineering Geology			Blum

Prerequisites
none

Workload
150 hours

T 3.272 Course: Introduction to Engineering Mechanics I: Statics and Strength of Materials [T-MACH-102208]

Responsible: Prof. Dr.-Ing. Alexander Fidlin
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each summer term	2

Events					
ST 2025	2162238	Introduction to Engineering Mechanics I: Statics and Strength of Materials	2 SWS	Lecture / 🗣	Böhlke, Kehrer
ST 2025	2162239	Introduction to Engineering Mechanics I: Statics and Strength of Materials (Tutorial)	1 SWS	Practice / 🗣	Luo
Exams					
WT 24/25	76-T-MACH-102208-1	Introduction to Engineering Mechanics I: Statics (75min)			Fidlin
WT 24/25	76-T-MACH-102208-2	Introduction to Engineering Mechanics I: Statics and Strength of Materials (120min)			Fidlin
ST 2025	76-T-MACH-102208-1	Introduction to Engineering Mechanics I: Statics (75 Min)			Fidlin
ST 2025	76-T-MACH-102208-2	Introduction to Engineering Mechanics I: Statics and Strength of Materials (120 Min)			Fidlin

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

Assessment
The assessment consists of a written examination (120 min) taking place in the recess period (according to Section 4(2), 1 of the examination regulation). The examination takes place in every semester. Re-examinations are offered at eyery ordinary examination date.

For students of economics the assessement consists of a written examination (Statics - 75 min.)

Permitted utilities: non-programmable calculator

Prerequisites
None

Additional Information
The course is offered in German.

Workload
150 hours

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

V Introduction to Engineering Mechanics I: Statics and Strength of Materials

2162238, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Statics: force · moment · general equilibrium condistions · center of mass · inner force in structure · plane frameworks · theory of adhesion

T 3.273 Course: Introduction to Engineering Mechanics II : Dynamics [T-MACH-102210]

Responsible: Prof. Dr.-Ing. Alexander Fidlin
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each winter term	1

Events					
WT 24/25	2161276	Introduction to Engineering Mechanics II : Dynamics	2 SWS	Lecture / 🗣	Fidlin
Exams					
WT 24/25	76-T-MACH-102210	Introduction to Engineering Mechanics II : Dynamics			Fidlin
ST 2025	76-T-MACH-102210	Introduction to Engineering Mechanics II : Dynamics			Fidlin

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

Assessment
The assessment consists of a written examination (75 min) taking place in the recess period (according to Section 4(2), 1 of the examination regulation). The examination is offered every semester. Re-examinations are offered at every ordinary examination date.

Permitted utilities: non-programmable calculator, literature.

Prerequisites
None

Additional Information
The course is offered in German.

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

V Introduction to Engineering Mechanics II : Dynamics

2161276, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

T 3.274 Course: Introduction to Finance and Accounting [T-WIWI-112820]

Responsible: Dr. Torsten Luedecke
Prof. Dr. Martin Ruckes
Dr. Jan-Oliver Strych
Prof. Dr. Marliese Uhrig-Homburg
Prof. Dr. Marcus Wouters

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each summer term	2

Events					
ST 2025	2500025	Tutorial Introduction to Finance and Accounting	2 SWS	Tutorial (	Wouters, Ruckes, Assistenten, Kohl
ST 2025	2610026	Introduction to Finance and Accounting	2 SWS	Lecture / 🗣	Ruckes, Wouters, Thimme
Exams					
WT 24/25	7900005	Financing and Accounting			Ruckes, Wouters, Luedecke
ST 2025	7900043	Financing and Accounting			Ruckes, Wouters, Luedecke

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

Assessment
Written Exam (150 min). The examination is offered at the beginning of each lecture-free period. Repeat examinations are possible at any regular examination date.

Workload
150 hours

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

V Introduction to Finance and Accounting

2610026, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture covers the following topics:

- Investment and Finance
  - Valuation of Bonds and Stocks
  - Capital Budgeting
  - Portfolio Theory
- Financial Accounting
- Management Accounting

Literature
Ausführliche Literaturhinweise werden in den Materialen zur Vorlesung gegeben.

T 3.275 Course: Introduction to Game Theory [T-WIWI-102850]

Responsible: Prof. Dr. Clemens Puppe
Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	3

Events					
ST 2025	2520525	Introduction to Game Theory	2 SWS	Lecture / 🗣	Reiß
ST 2025	2520526	Übungen zu Einführung in die Spieltheorie	1 SWS	Practice / 🗣	Reiß, Potarca
Exams					
WT 24/25	7900006	Introduction to Game Theory			Puppe
ST 2025	7910001	Introduction to Game Theory			Reiß

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

Assessment
The assessment consists of a written exam (60 minutes) according to Section 4(2),1 of the examination regulation.

The exam takes place in the recess period and can be repeated at every ordinary examination date.

Recommendations
Knowledge from the lecture "Economics I: Microeconomics" is recommended. Furthermore, basic knowledge of mathematics and statistics is assumed.

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

V Introduction to Game Theory

2520525, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The course focusses on non-cooperative game theory. It discusses models, solution concepts, and applications for simultaneous games as well as sequential games. Various solution concepts, e.g., Nash equilibrium and subgame-perfect equilibrium, are introduced along with more advanced concepts.

The assessment consists of a written exam (60 minutes) according to Section 4(2),1 of the examination regulation.

The exam takes place in the recess period and can be resited at every ordinary examination date.

Recommendation: You should have passed the module [M-WIWI-101398] *Introduction to Economics*.

Recommendations:

Basic knowledge of mathematics and statistics is assumed.

This course offers an introduction to the theoretical analysis of strategic interaction situations. At the end of the course, students shall be able to analyze situations of strategic interaction systematically and to use game theory to predict outcomes and give advice in applied economics settings.

Compulsory textbook:

Gibbons (1992): A Primer in Game Theory, Harvester-Wheatsheaf.

Additional Literature:

Berninghaus/Ehrhart/Güth (2010): Strategische Spiele, Springer Verlag.

Binmore (1991): Fun and Games, DC Heath.

Fudenberg/Tirole (1991): Game Theory, MIT Press.

Heifetz (2012): Game Theory, Cambridge Univ. Press.

Literature
Verpflichtende Literatur:

Gibbons (1992): A Primer in Game Theory, Harvester-Wheatsheaf.

Ergänzende Literatur:

Berninghaus/Ehrhart/Güth (2010): Strategische Spiele, Springer Verlag.

Binmore (1991): Fun and Games, DC Heath.

Fudenberg/Tirole (1991): Game Theory, MIT Press.

Heifetz (2012): Game Theory, Cambridge Univ. Press.

T 3.276 Course: Introduction to GIS for Students of Natural, Engineering and Geo Sciences [T-BGU-101681]

Responsible: Dr.-Ing. Sven Wursthorn
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	4

Events					
WT 24/25	6071101	Introduction to GIS for Students of Natural Sciences, Engineering and Geosciences, L+E	4 SWS	Lecture / Practice (/ 🗣	Wursthorn
Exams					
WT 24/25	8280101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences			Wursthorn
ST 2025	8280101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences			Wursthorn

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

Assessment
written exam, 90 min.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-BGU-103541 - Introduction to GIS for Students of Natural, Engineering and Geo Sciences, Prerequisite must have been passed.

Workload
90 hours

T 3.277 Course: Introduction to GIS for Students of Natural, Engineering and Geo Sciences, Prerequisite [T-BGU-103541]

Responsible: Dr.-Ing. Sven Wursthorn
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Coursework	3 CP	pass/fail	Each winter term	1 terms	5

Events					
WT 24/25	6071101	Introduction to GIS for Students of Natural Sciences, Engineering and Geosciences, L+E	4 SWS	Lecture / Practice (/ 🗣	Wursthorn
Exams					
WT 24/25	8280103541	Introduction to GIS for Students of Natural, Engineering and Geo Sciences			Wursthorn

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

Assessment
The achievement control takes place via accepted exercises.

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
90 hours

T 3.278 Course: Introduction to Hydrogeology [T-BGU-101499]

Responsible: Prof. Dr. Nico Goldscheider
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each winter term	2

Events					
WT 24/25	6339050	Introduction to Hydrogeology	4 SWS	Lecture / Practice (/	Goldscheider
Exams					
WT 24/25	8210_101499	Introduction to Hydrogeology			Goldscheider
ST 2025	8210_101499_	Introduction to Hydrogeology			Goldscheider

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

Assessment
Written exam with 90 minutes

Prerequisites
none

Workload
150 hours

T 3.279 Course: Introduction to Machine Learning [T-WIWI-111028]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Dr. Abdolreza Nazemi
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	4,5 CP	graded	Each winter term	1 terms	1

Events					
WT 24/25	2540539	Introduction to Machine Learning	2 SWS	Lecture / 🗣	Nazemi
WT 24/25	2540540	Übung zu Introduction to Machine Learning	1 SWS	Practice / 🗣	Nazemi
Exams					
WT 24/25	7900349	Introduction to Machine Learning (WS 2024/2025)			Geyer-Schulz
ST 2025	7900076	Introduction to Machine Learning			Geyer-Schulz

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

Assessment
Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five-point-steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.
A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Workload
135 hours

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

V Introduction to Machine Learning

2540539, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content

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

Literature

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

T 3.280 Course: Introduction to Microsystem Technology - Practical Course [T-MACH-108312]

Responsible: Dr. Arndt Last
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework	3 CP	pass/fail	Each term	2

Events					
WT 24/25	2143877	Introduction to Microsystem Technology - Practical Course	2 SWS	Practical course / 🗣	Last
ST 2025	2143877	Introduction to Microsystem Technology - Practical Course	2 SWS	Practical course / 🗣	Last
Exams					
WT 24/25	76-T-MACH-108312	Introduction to Microsystem Technology - Practical Course			Last
ST 2025	76-T-MACH-108312	Introduction to Microsystem Technology - Practical Course			Last

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

Assessment
non-graded written examination

Prerequisites
none

Workload
120 hours

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

V Introduction to Microsystem Technology - Practical Course

2143877, WS 24/25, 2 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

Literature
Menz, W., Mohr, J.: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 1997
Unterlagen zum Praktikum zur Vorlesung ' Grundlagen der Mikrosystemtechnik'

V Introduction to Microsystem Technology - Practical Course

2143877, SS 2025, 2 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

Content
In the practical training includes nine experiments:

1. X-ray optics
2. UVL + REM
3. Micromixer
4. Atomic force microscopy
5. 3D-Printing
6. Light dirffraction at Chromium masks
7. Moulding
8. SAW-bio-sensors
9. Nano3D-printer - material transfer of thin foils
10. Electro spinning

Each student takes part in only four experiments.
The experiments are carried out at real workstations at the IMT and coached by IMT-staff.

Organizational issues
Das Praktikum findet in den Laboren des IMT am KIT-CN statt. Treffpunkt: Eingang Bau 301.

Das "Laborpraktikum" ist das selbe wie das "Praktikum", nur unbenotet! Beide mit schriftlicher Klausur.

Wer teilnehmen möchte, muss sich ab 7.7.2025, 8h00 über das Campussystem unter Veranstaltungen (nicht unter Prüfungen!) auf die Warteliste setzen. Die endgültige Entscheidung, ob man teilnehmen kann, erfolgt erst 25.8.2025.

Literature
Menz, W., Mohr, J.: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 1997
Unterlagen zum Praktikum zur Vorlesung ' Grundlagen der Mikrosystemtechnik'

T 3.281 Course: Introduction to Microsystem Technology I [T-MACH-114100]

Responsible: Dr. Vlad Badilita
Prof. Dr. Jan Gerrit Korvink

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2141861	Introduction to Microsystem Technology I	2 SWS	Lecture / 🗣	Korvink, Badilita

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

Assessment
written examination (60 min)

Prerequisites
T-MACH-114035 and T-MACH-105182 must not have started

Workload
120 hours

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

V Introduction to Microsystem Technology I

2141861, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Literature
Mikrosystemtechnik für Ingenieure, W. Menz und J. Mohr, VCH Verlagsgesellschaft, Weinheim 2005

M. Madou
Fundamentals of Microfabrication
Taylor & Francis Ltd.; Auflage: 3. Auflage. 2011

T 3.282 Course: Introduction to Microsystem Technology II [T-MACH-114101]

Responsible: Dr. Vlad Badilita
Prof. Dr. Jan Gerrit Korvink

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2142874	Introduction to Microsystem Technology II	2 SWS	Lecture / 🗣	Korvink, Badilita

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

Assessment
written examination (60 min)

Prerequisites
T-MACH-114035 and T-MACH-105183 must not have started

Workload
120 hours

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

V Introduction to Microsystem Technology II

2142874, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
- Introduction in Nano- and Microtechnologies
- Lithography
- LIGA-technique
- Mechanical microfabrication
- Patterning with lasers
- Assembly and packaging
- Microsystems

Organizational issues
Topic: Grundlagen der Mikrosystemtechnik II (MST II) SS 21
Time: Thursdays 14:00 - 15:30

10.91 Redtenbacher-Hörsaal

Literature
Menz, W., Mohr, J., O. Paul: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 2005

M. Madou
Fundamentals of Microfabrication
Taylor & Francis Ltd.; Auflage: 3. Auflage. 2011

T 3.283 Course: Introduction to Nanotechnology [T-MACH-111814]

Responsible: apl. Prof. Dr. Hendrik Hölscher
Organisation: KIT Department of Mechanical Engineering
KIT Department of Economics and Management
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	2

Events					
ST 2025	2142152	Introduction to Nanotechnology	2 SWS	Lecture / 🗣	Hölscher
Exams					
WT 24/25	76-T-MACH-105180	Introduction into Nanotechnology			Hölscher, Dienwiebel
ST 2025	76-T-MACH-105180	An introduction into Nanotechnology			Hölscher

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

Assessment
written exam 90 min

Prerequisites
none

Additional Information
Brick T-MACH-111814 may not be started

Workload
120 hours

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

V Introduction to Nanotechnology

2142152, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Nanotechnology deals with the fabrication and analysis of nanostructures. The topics of the lecture include

- the most common measurement principles of nanotechnology especially scanning probe methods
- the analysis of physical and chemical properties of surfaces
- interatomic forces and their influence on nanostructures
- methods of micro- and nanofabrication and lithography
- basic models of contact mechanics and nanotribology
- important functional characteristics of nanodevices

Basic knowledge in mathematics and physics is assumed

The successfull attandence of the lecture is controlled by a 30 minutes oral exam.

Organizational issues
Es werden im ILIAS Materialien (Videos, Originalliteratur, Übungen) zum Vertiefung zur Verfügung gestellt.

Für die mündlichen Prüfungen werden zwei Termine angeboten (erste Woche nach Vorlesungsende im Sommersemester und eine Woche vor Vorlesungsbeginn im Wintersemester).

Literature
Alle Folien und Originalliteratur werden auf ILIAS zur Verfügung gestellt.

T 3.284 Course: Introduction to Neural Networks and Genetic Algorithms [T-WIWI-111029]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	4,5 CP	graded	Each summer term	1 terms	1

Events					
ST 2025	2540541	Introduction to Neural Networks and Genetic Algorithms	2 SWS	Lecture	Geyer-Schulz
ST 2025	2540542	Übung Introduction to Neural Networks and Genetic Algorithms	1 SWS	Practice	Geyer-Schulz
Exams					
WT 24/25	7900295	Introduction to Neural Networks and Genetic Algorithms (Nachklausur SoSe 2024)			Geyer-Schulz
ST 2025	7900303	Introduction to Neural Networks and Genetic Algorithms			Geyer-Schulz

Assessment
Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five-point-steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.
A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Workload
135 hours

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

V Introduction to Neural Networks and Genetic Algorithms

2540541, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)

Content
The course consists of a short introduction and two parts:

1. In the introduction, the biological mechanisms of neural and genetic methods are presented.
   Furthermore, a common framework for the learning performance evaluation of these methods in applications is introduced.
2. In the field of genetic methods, simple genetic algorithms and their variants are introduced, analyzed, and applied.
3. In the area of neural methods, the basic algorithms are presented (e.g., backpropagation) as well as their applications in data science.

Learning Objectives:

The student knows the essential algorithms, learning procedures, and methods for neural networks and genetic algorithms. They can apply these methods (e.g. in R) and evaluate their quality.

Literature

- Goldberg, David E. (2001)
  Genetic Algorithms in Search, Optimization and Machine Learning.
  Addison-Wesley, New York.
- Bishop, Christopher M. (2006)
  Pattern Recognition and Machine Learning.
  Springer, New York.
- Goodfellow, Ian; Bengio, Yoshua; Courville, Aaron (2016)
  Deep Learning.
  MIT Press. Cambridge.

T 3.285 Course: Introduction to Operations Research I and II [T-WIWI-102758]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	9 CP	graded	see Annotations	2

Events					
WT 24/25	2500030	Computer Exercises on Introduction to Operations Research II	1 SWS	Tutorial (/	Dunke
WT 24/25	2530043	Introduction to Operations Reseasrch II		Lecture /	Nickel
WT 24/25	2530044			Tutorial (/	Dunke
WT 24/25	2550043	Introduction to Operations Research II		Lecture /	Nickel
ST 2025	2500008	Computer Exercises on Introduction to Operations Research I	1 SWS	Tutorial (/	Dunke
ST 2025	2550040	Introduction to Operations Research I	2 SWS	Lecture /	Stein
ST 2025	2550043	Tutorials on Introduction to Operations Research I	2 SWS	Tutorial (/	Dunke
Exams					
WT 24/25	00060	Introduction to Operations Research I and II			Nickel
ST 2025	7900073	Introduction to Operations Research I and II			Nickel

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

Assessment
The assessment of the module is carried out by a written examination (120 minutes) according to Section 4(2), 1 of the examination regulation.
In each term (usually in March and August), one examination is held for both courses.
The overall grade of the module is the grade of the written examination.

Prerequisites
None

Recommendations
Knowledge of Mathematics I and II is recommended, as well as programming knowledge for the software laboratory.
It is strongly recommended to attend the course Introduction to Operations Research I
[2550040] before attending the courseIntroduction to Operations Research II
[2530043].

Workload
270 hours

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

V Introduction to Operations Reseasrch II

2530043, WS 24/25, SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Integer and combinatorial optimization: basic concepts, cutting plane methods, branch-and-bound methods, branch-and-cut methods, heuristic methods.

Nonlinear optimization: basic concepts, optimality conditions, solution methods for convex and nonconvex optimization problems.

Dynamic and stochastic models and methods: Dynamic optimization, Bellman methods, lot-sizing models and dynamic and stochastic models of inventory, queues.

Learning Objectives:

The student

- knows and describes the basic concepts of integer and combinatorial optimization, nonlinear optimization and dynamic optimization,
- knows the methods and models indispensable for a quantitative analysis,
- models and classifies optimization problems and selects appropriate solution procedures to solve simple optimization problems independently,
- validates, illustrates and interprets obtained solutions.

Literature

- Nickel, Stein, Waldmann: Operations Research, 2. Auflage, Springer, 2014
- Hillier, Lieberman: Introduction to Operations Research, 8th edition. McGraw-Hill, 2005
- Murty: Operations Research. Prentice-Hall, 1995
- Neumann, Morlock: Operations Research, 2. Auflage. Hanser, 2006
- Winston: Operations Research - Applications and Algorithms, 4th edition. PWS-Kent, 2004

V Introduction to Operations Research II

2550043, WS 24/25, SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Integer and Combinatorial Programming: Basic notions, cutting plane metehods, branch and bound methods, branch and cut methods, heuristics.

Nonlinear Programming: Basic notions, optimality conditions, solution methods for convex and nonconvex optimization problems.

Dynamic and stochastic models and methods: dynamical programming, Bellman method, lot sizing models, dyanical and stochastic inventory models, queuing theory.

Learning objectives:

The student

- names and describes basic notions of integer and combinatorial optimization, nonlinear programming, and dynamic programming,
- knows the indispensable methods and models for quantitative analysis,
- models and classifies optimization problems and chooses the appropriate solution methods to solve optimization problems independently,
- validates, illustrates and interprets the obtained solutions.

Literature

- Nickel, Stein, Waldmann: Operations Research, 2. Auflage, Springer, 2014
- Hillier, Lieberman: Introduction to Operations Research, 8th edition. McGraw-Hill, 2005
- Murty: Operations Research. Prentice-Hall, 1995
- Neumann, Morlock: Operations Research, 2. Auflage. Hanser, 2006
- Winston: Operations Research - Applications and Algorithms, 4th edition. PWS-Kent, 2004

V Introduction to Operations Research I

2550040, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Examples for typical OR problems.

Linear Programming: Basic notions, simplex method, duality, special versions of the simplex method (dual simplex method, three phase method), sensitivity analysis, parametric optimization, game theory.

Graphs and Networks: Basic notions of graph theory, shortest paths in networks, project scheduling, maximal and minimal cost flows in networks.

Learning objectives:

The student

- names and describes basic notions of linear programming as well as graphs and networks,
- knows the indispensable methods and models for quantitative analysis,
- models and classifies optimization problems and chooses the appropriate solution methods to solve optimization problems independently,
- validates, illustrates and interprets the obtained solutions.

Literature

- Nickel, Rebennack, Stein, Waldmann: Operations Research, 3. Auflage, Springer, 2022
- Hillier, Lieberman: Introduction to Operations Research, 8th edition. McGraw-Hill, 2005
- Murty: Operations Research. Prentice-Hall, 1995
- Neumann, Morlock: Operations Research, 2. Auflage. Hanser, 2006
- Winston: Operations Research - Applications and Algorithms, 4th edition. PWS-Kent, 2004

T 3.286 Course: Introduction to Programming with Java [T-WIWI-102735]

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each winter term	2

Events					
WT 24/25	2511000	Introduction to Programming with Java	3 SWS	Lecture / 🗣	Zöllner
WT 24/25	2511002	Tutorien zu Programmieren I: Java	1 SWS	Tutorial (	Zöllner, Stegmaier, Mütsch
WT 24/25	2511003	Computer lab Introduction to Programming with Java	2 SWS		Zöllner, Stegmaier, Mütsch
Exams					
WT 24/25	79AIFB_Prog1	Introduction to Programming with Java			Zöllner
ST 2025	7900042	Introduction to Programming with Java			Zöllner

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

Assessment
The assessment consists of a written resp. computer-based exam (60 min) according to Section 4 (2),1 of the examination regulation.

The successful completion of the compulsory tests in the computer lab is prerequisited for admission to the written resp. computer-based exam.

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

Additional Information
see german version

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

V Introduction to Programming with Java

2511000, WS 24/25, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture "Introduction to Programming with Java " introduces systematic programming and provides essential practical basics for all advanced computer science lectures.

Based on considerations of the structured and systematic design of algorithms, the most important constructs of modern higher programming languages as well as programming methods are explained and illustrated with examples. One focus of the lecture is on teaching the concepts of object-oriented Programming. Java is used as the programming language. Knowledge of this language is required in advanced computer science lectures.

At the end of the lecture period, a written examination will be held for which admission must be granted during the semester after successful participation in the practices. The exact details will be announced in the lecture.

Learning objectives:

- Knowledge of the fundamentals, methods and systems of computer science.
- The students acquire the ability to independently solve algorithmic problems in the programming language Java, which dominates in business applications.
- In doing so, they will be able to find strategic and creative answers in finding solutions to well-defined, concrete and abstract problems.

Workload:

The total workload for this course is approximately 150 hours. For further information see German version.

Literature
Ratz, D. Schulmeister-Zimolong, D. Seese, J. Wiesenberger. Grundkurs Programmieren in Java. 8. Aktualisierte und erweiterte Auflage, Hanser 2018

T 3.287 Course: Introduction to Public Finance [T-WIWI-102877]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2560131	Introduction to Public Finance	3 SWS	Lecture /	Wigger
Exams					
WT 24/25	790fiwi	Introduction to Public Finance			Wigger
ST 2025	790fiwi	Introduction to Public Finance			Wigger

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

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

Prerequisites
None

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

V Introduction to Public Finance

2560131, WS 24/25, 3 SWS, Language: German, Open in study portal

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

Content
The course *Introduction to Public Finance* provides an overview of the fundamental issues in public economics. The first part of the course deals with normative theories about the economic role of the state in a market economy. Welfare economics theory is offered as a base model, with which alternative normative theories are compared and contrasted. Within this theoretical framework, arguments concerning efficiency and equity are developed as justification for varying degrees of economic intervention by the state. The second part of the course deals with the positivist theory of public economics. Processes of public decision making are examined and the conditions that lead to market failures resulting from collective action problems are discussed. The third part of the course examines a variety of public spending programs, including social security systems, the public education system, and programs aimed at reducing poverty. The fifth part of the course addresses the key theoretical and political issues associated with fiscal federalism.

Learning goals:

Students are able to:

- critically assess the economic role of the state in a market economy
- explain and discuss key concepts in public finance, including: public goods; economic externalities; and market failure
- explain and critically discuss competing theoretical approaches to public finance, including welfare economics and public choice theory
- explain the theory of bureaucracy according to Weber and critically assess its strengths and weaknesses
- evaluate the incentives inherent in the bureaucratic model, as well as the more recent introduction of market-oriented incentives associated with public-sector reform

Workload:

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

Literature
Literatur:

Wigger, B. U. 2006. *Grundzüge der Finanzwissenschaft.* Springer: Berlin.

T 3.288 Course: Introduction to Quantum Computing (IQC) [T-INFO-112344]

Responsible: Prof. Dr. Bernhard Beckert
Prof. Dr.-Ing. Ina Schaefer

Organisation: KIT Department of Informatics

Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	1

T 3.289 Course: Introduction to Stochastic Optimization [T-WIWI-106546]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	3

Events					
ST 2025	2550470	Introduction to Stochastic Optimization	2 SWS	Lecture /	Rebennack
ST 2025	2550471	Übung zur Einführung in die Stochastische Optimierung	1 SWS	Practice /	Rebennack, Kandora
ST 2025	2550474	Rechnerübung zur Einführung in die Stochastische Optimierung	2 SWS	Others (sons	Rebennack, Kandora
Exams					
WT 24/25	7900242	Introduction to Stochastic Optimization			Rebennack
ST 2025	7900311	Introduction to Stochastic Optimization			Rebennack

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

Assessment
The assessment consists of a written exam (60 minutes). The exam takes place in every semester.

Prerequisites
None.

Workload
135 hours

T 3.290 Course: Investments [T-WIWI-102604]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2530575	Investments	2 SWS	Lecture / 🗣	Uhrig-Homburg
ST 2025	2530576	Übung zu Investments	1 SWS	Practice / 🗣	Uhrig-Homburg, Kargus
Exams					
WT 24/25	7900054	Investments			Uhrig-Homburg
ST 2025	7900109	Investments			Uhrig-Homburg

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

Assessment
Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination or as an open-book examination (alternative exam assessment).

A bonus can be earned by correctly solving at least 50% of the posed bonus exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites
None

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

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

V Investments

2530575, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Literature
Weiterführende Literatur:

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

T 3.291 Course: IoT Platform for Engineering [T-MACH-106743]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	4 CP	graded	Each term	2

Events					
WT 24/25	2123352	IoT platform for engineering	3 SWS	Project (P / 🗣	Meyer, Maier, Rönnau
ST 2025	2123352	IoT platform for engineering	3 SWS	Project (P / 🗣	Meyer, Maier
Exams					
WT 24/25	76T-MACH-106743	IoT platform for engineering			Meyer
ST 2025	76-T-MACH-106743	IoT platform for engineering			Meyer

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

Assessment
Assessment of another type (graded), Group teaching project on Industry 4.0 consisting of: Conception, implementation, accompanying documentation and final presentation.

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

V IoT platform for engineering

2123352, WS 24/25, 3 SWS, Language: German, Open in study portal

Project (PRO)
On-Site

Content
Industry 4.0, IT systems for fabrication and assembly, process modelling and execution, project work in teams, practice-relevant I4.0 problems, in automation, manufacturing industry and service.

Students can

- map and analyze processes in the context of Industry 4.0 with special methods of process modelling
- collaboratively grasp practical I4.0 issues using existing hardware and software and work out solutions for a continuous improvement process in a team
- prototypically implement the self-developed solution proposal with the given IT systems and the existing hardware equipment and finally present the results

Organizational issues
Auftakt: Mi 23 Okt 10:00h - G20.20 (EG) R061

Literature
Keine / None

V IoT platform for engineering

2123352, SS 2025, 3 SWS, Language: German, Open in study portal

Project (PRO)
On-Site

Content
Industry 4.0, IT systems for fabrication and assembly, process modelling and execution, project work in teams, practice-relevant I4.0 problems, in automation, manufacturing industry and service.

Students can

- map and analyze processes in the context of Industry 4.0 with special methods of process modelling
- collaboratively grasp practical I4.0 issues using existing hardware and software and work out solutions for a continuous improvement process in a team
- prototypically implement the self-developed solution proposal with the given IT systems and the existing hardware equipment and finally present the results

Organizational issues
Zeit und Ort siehe ILIAS

Literature
Keine / None

T 3.292 Course: IT-Based Road Design [T-BGU-101804]

Responsible: Dr.-Ing. Matthias Zimmermann
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each term	1 terms	1

Events					
WT 24/25	6233901	IT-based Road Design	2 SWS	Lecture / Practice (/	Zimmermann

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

Assessment
oram exam with 15 minutes

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.293 Course: IT-Fundamentals of Logistics [T-MACH-105187]

Responsible: Prof. Dr.-Ing. Frank Thomas
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	4

Assessment
The assessment consists of an oral exam (20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Prerequisites
none

Workload
120 hours

T 3.294 Course: IT-Security Management for Networked Systems [T-INFO-101323]

Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Oral examination	5 CP	graded	Each winter term	1

Events					
WT 24/25	2424149	IT-Security Management for Networked Systems	3 SWS	Lecture / Practice (/	Hartenstein, Droll, Grundmann
Exams					
WT 24/25	7500348	IT-Security Management for Networked Systems			Hartenstein
WT 24/25	7500599	IT-Security Management for Networked Systems			Hartenstein
ST 2025	7500599	IT-Security Management for Networked Systems			Hartenstein

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

T 3.295 Course: Joint Entrepreneurship Summer School [T-WIWI-109064]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	6 CP	graded	Irregular	1

Events					
ST 2025	2545021	Joint Entrepreneurship School China	4 SWS	Seminar / 🗣	Kleinn, Terzidis, Eckerle
Exams					
ST 2025	7900346	Joint Entrepreneurship Summer School (China)			Terzidis

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

Assessment
The learning control of the program (Summer School) consists of two parts:
A) **Investor Pitch**:
Based on a presentation (investor pitch) in front of a jury, the insights gained and developed during the course of the event are presented and the business idea presented. Among other things, the presentation performance of the team, the structured content and the logical consistency of the business idea are evaluated. The exact evaluation criteria will be announced in the course.

B) **Written elaboration:**
The second part of the assessment is a written report. The iterative knowledge gain of the entire event is systematically logged and can be further supplemented by the contents of the presentation. The report documents key action steps, applied methods, findings, market analyzes and interviews and prepares them in writing. The exact structure and requirements will be announced in the course.

The grade consists of 50% presentation performance and 50% written preparation. The points system for the assessment is determined by the lecturer of the course. It will be announced at the beginning of the course.

Prerequisites
The Summer School is aimed at master students of KIT. Prerequisite is the participation in the selection process.

Recommendations
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.

Additional Information
The working language during the Summer School is English. A one-week stay in China is part of the Summer School.

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

V Joint Entrepreneurship School China

2545021, SS 2025, 4 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
During the Summer School in Shanghai and Karlsruhe, students develop a business model of technologies and patents developed at KIT in workshops in German-Chinese tandems over the period of two weeks.

Click on our website for detailed information and a video: https://etm.entechnon.kit.edu/english/1095.php

Organizational issues
Dates:

- Briefing: April / May
- Karlsruhe: Presumably: 04.-08. August 2025
- Shanghai: Presumably: 22.-26. September 2025
- Deliverables: November 2025

T 3.296 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	4,5 CP	graded	Irregular	1 terms	1

Assessment
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.

Additional Information
The number of participants is limited due to laboratory capacity and to ensure optimal supervision of the project groups. Places are allocated on the basis of preferences and suitability for the topics. Previous knowledge in the field of experimental economic research is particularly important.

The course cannot be offered in the summer semester 2024.

Workload
135 hours

T 3.297 Course: Knowledge Discovery [T-WIWI-102666]

Responsible: Dr.-Ing. Tobias Käfer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each winter term	3

Events					
WT 24/25	2511303	Knowledge Discovery, Graph Neural Networks, and Language Models	3 SWS	Lecture / Practice (/	Käfer, Shao, Noullet, Qu , Popovic
Exams					
WT 24/25	79AIFB_KD_B3	Knowledge Discovery			Käfer
ST 2025	79AIFB_KD_C4	Knowledge Discovery (Registration until 21.07.2025)			Käfer

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

Assessment
The overall grade will be determined using assignments during the semester (40% of the grade) and a final exam (60% of the grade).

Prerequisites
None

Workload
135 hours

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

V **Knowledge Discovery, Graph Neural Networks, and Language Models** **Lecture / Practice (VÜ) Blended (On-Site/Online)**
2511303, WS 24/25, 3 SWS, Language: English, Open in study portal

Content
The lecture provides a comprehensive overview of various approaches in machine learning and data mining for knowledge extraction. It explores multiple fields, including machine learning, natural language processing, and knowledge representation. The main focus is on discovering patterns and regularities in extensive data sets, particularly unstructured text found in news articles, publications, and social media. This process is known as knowledge discovery. The lecture delves into specific techniques, methods, challenges, as well as current and future research topics within this field.
One part of the lecture is dedicated to understanding large language models (LLMs), such as ChatGPT, by exploring their underlying principles, training methods, and applications. Additionally, the lecture dives into graph representation learning, which involves extracting meaningful representations from graph data. It covers the mathematical foundations of graph and geometric deep learning, highlighting the latest applications in areas like explainable recommender systems.
Moreover, the lecture highlights the integration of knowledge graphs with large language models, known as neurosymbolic AI. This integration aims to combine structured and unstructured data to enhance knowledge extraction and representation.
The content of the lecture encompasses the entire machine learning and data mining process. It covers topics on supervised and unsupervised learning techniques, as well as empirical evaluation. Various learning methods are explored, ranging from classical approaches like decision trees, support vector machines, and neural networks to more recent advancements such as graph neural networks.

Learning obectives:

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 preperation and postprocessing: 60 hours
- Exam and exam preperation: 30 hours

Literature

- T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning: Data Mining, Inference, and Prediction (http://www-stat.stanford.edu/~tibs/ElemStatLearn/)
- T. Mitchell. Machine Learning. 1997
- M. Berhold, D. Hand (eds). Intelligent Data Analysis - An Introduction. 2003
- P. Tan, M. Steinbach, V. Kumar: Introduction to Data Mining, 2005, Addison Wesley

T 3.298 Course: Lab Practice Sessions in R for Statistics 1 and 2 [T-WIWI-111941]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Coursework (practical)	2 CP	pass/fail	Each winter term	1

Events					
WT 24/25	2610022	PC-Praktikum zu Statistik II	2 SWS		Grothe, Lerch
ST 2025	2600010	PC-Praktikum zu Statistik I	2 SWS	Block /	Krüger, Becker, N.N., Biegert
Exams					
WT 24/25	7900366	Lab Practice Sessions in R for Statistics 1 and 2			Grothe

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

Assessment
The assessment consists of two projects - one for Statistic 1 and one for Statistic 2. Both must be passed to pass the course.

Workload
60 hours

T 3.299 Course: Laboratory Laser Materials Processing [T-MACH-102154]

Responsible: Dr.-Ing. Johannes Schneider
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework	4 CP	pass/fail	Each term	2

Events					
WT 24/25	2183640	Laboratory "Laser Materials Processing"	3 SWS	Practical course /	Schneider, Pfleging
ST 2025	2183640	Laboratory "Laser Materials Processing"	3 SWS	Practical course /	Schneider, Pfleging
Exams					
WT 24/25	76-T-MACH-102154	Laboratory Laser Materials Processing			Schneider
ST 2025	76-T-MACH-102154	Laboratory Laser Materials Processing			Schneider

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

Assessment
The assessment consists of a colloquium for every single experiment and an overall final colloquium incl. an oral presentation of 20 min.

Prerequisites
None

Recommendations
Basic knowledge of physics, chemistry and material science is assumed.

Additional Information
The course is offered in German.

Workload
120 hours

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

V Laboratory "Laser Materials Processing"

2183640, WS 24/25, 3 SWS, Language: German, Open in study portal

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

Content
The laboratory compromises 8 half-day experiments, which address the following laser processing topics of metals, ceramics and polymers:

• safety aspects

• surface hardening and remelting

• melt and reactive cutting

• surface modification by dispersing or alloying

• welding

• surface texturing

• metrology

There are used CO2-, excimer-, Nd:YAG- and high power diode-laser sources within the laboratory.

The student

- can describe the influence of laser, material and process parameters and can choose suitable parameters for the most important methods of laser-based processing in automotive engineering.
- can explain the requirements for safe handling of laser radiation and for the design of safe laser systems.

Basic knowledge of physics, chemistry and material science is assumed.

The attendance to one of the courses Physical Basics of Laser Technology (2181612) or Laser Application in Automotive Engineering (2182642) is strongly recommended.

regular attendance: 34 hours
self-study: 86 hours

The assessment consists of a colloquium for every single experiment and an overall final colloquium incl. an oral presentation of 20 min.

Organizational issues
Maximal 16 Teilnehmer/innen!
Es sind nur noch wenige Plätze frei (Stand 31.05.2024)! Registrierung für die Nachrückliste möglich per Email an johannes.schneider@kit.edu
Praktikum findet in Kleingruppen semesterbegleitend (dienstags bzw. mittwochs, halbtägig) auf dem Campus Nord am IAM-AWP (Geb. 681) und auf dem Campus Süd am IAM-CMS (Geb. 30.48) statt!

Termine werden mit den Teilnehmern/innen direkt abgestimmt.

Literature
F. K. Kneubühl, M. W. Sigrist: Laser, 2008, Vieweg+Teubner

T. Graf: Laser - Grundlagen der Laserstrahlquellen, 2009, Vieweg-Teubner Verlag

R. Poprawe: Lasertechnik für die Fertigung, 2005, Springer

H. Hügel, T. Graf: Laser in der Fertigung, 2009, Vieweg+Teubner

J. Eichler, H.-J. Eichler: Laser - Bauformen, Strahlführung, Anwendungen, 2006, Springer

V **Laboratory "Laser Materials Processing"** **Practical course (P)**
2183640, SS 2025, 3 SWS, Language: German, Open in study portal **Blended (On-Site/Online)**

Content
The laboratory compromises 8 half-day experiments, which address the following laser processing topics of metals, ceramics and polymers:

• safety aspects

• surface hardening and remelting

• melt and reactive cutting

• surface modification by dispersing or alloying

• welding

• surface texturing

• metrology

There are used CO2-, excimer-, Nd:YAG- and high power diode-laser sources within the laboratory.

The student

- can describe the influence of laser, material and process parameters and can choose suitable parameters for the most important methods of laser-based processing in automotive engineering.
- can explain the requirements for safe handling of laser radiation and for the design of safe laser systems.

Basic knowledge of physics, chemistry and material science is assumed.

The attendance to one of the courses Physical Basics of Laser Technology (2181612) or Laser Application in Automotive Engineering (2182642) is strongly recommended.

regular attendance: 34 hours
self-study: 86 hours

The assessment consists of a colloquium for every single experiment and an overall final colloquium incl. an oral presentation of 20 min.

Organizational issues
Die Praktikumsplätze für das Sommersemester 2025 sind bereits ausgebucht!

Anmeldung für die Nachrückliste per Email an johannes.schneider@kit.edu

Das Praktikum findet semesterbegleitend in Kleingruppen am IAM-ZM (CS) bzw. IAM-AWP (CN) statt!

Die Termine werden zu Beginn des Semesters bekannt gegeben.

Literature
F. K. Kneubühl, M. W. Sigrist: Laser, 2008, Vieweg+Teubner

T. Graf: Laser - Grundlagen der Laserstrahlquellen, 2009, Vieweg-Teubner Verlag

R. Poprawe: Lasertechnik für die Fertigung, 2005, Springer

H. Hügel, T. Graf: Laser in der Fertigung, 2009, Vieweg+Teubner

J. Eichler, H.-J. Eichler: Laser - Bauformen, Strahlführung, Anwendungen, 2006, Springer

W.T. Silfvast: Laser Fundamentals, 2008, Cambrigde University Press

W.M. Steen: Laser Materials Processing, 2010, Springer

T 3.300 Course: Laboratory Production Metrology [T-MACH-108878]

Responsible: Prof. Dr.-Ing. Gisela Lanza
Dr. Florian Stamer

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework	4 CP	pass/fail	Each summer term	3

Events					
ST 2025	2150550	Laboratory Production Metrology	3 SWS	Practical course / 🗣	Lanza, Stamer
Exams					
ST 2025	76-T-MACH-108878	Laboratory Production Metrology			Lanza, Stamer

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

Assessment
Alternative Test Achievement: Group presentation of 15 min at the beginning of each experiment and evaluation of the participation during the experiments

and

Oral Exam (15 min)

Prerequisites
none

Additional Information
The course is offered in German.

For organizational reasons the number of participants for the course is limited. Hence al selection process will take place. Applications are made via the homepage of wbk (http://www.wbk.kit.edu/studium-und-lehre.php).

Workload
120 hours

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

V Laboratory Production Metrology

2150550, SS 2025, 3 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

Content
During this course, students get to know measurement systems that are used in a production system. In the age of Industry 4.0, sensors are becoming more important. Therefore, the application of in-line measurement technology such as machine vision and non-destructive testing is focussed. Additionally, laboratory based measurement technologies such as computed tomography are addressed. The students learn the theoretical background as well as practical applications for industrial examples. The students use sensors by themselves during the course. Additionally, they are trained on how to integrate sensors in production processes and how to analyze measurement data with suitable software.

The following topics are addressed:

- Classification and examples for different measurement technologies in a production environment
- Machine vision with optical sensors
- Information fusion based on optical measurements
- Robot-based optical measurements
- Non-destructive testing by means of acoustic measurements
- Coodinate measurement technology
- Industrial computed tomography
- Measurement uncertainty evaluation
- Analysis of production data by means of data mining

Learning Outcomes:

The students …

- are able to name, describe and mark out different measurement technologies that are relevant in a production environment.
- are able to conduct measurements with the presented in-line and laboratory based measurement systems.
- are able to analyze measurement results and asses the measurement uncertainty of these.
- are able to deduce whether a work piece fulfills quality relevant specifications by analysing measurement results.
- are able to use the presented measurement technologies for a new task.

Workload:

regular attendance: 31,5 hours
self-study: 88,5 hours

Organizational issues
Aus organisatorischen Gründen ist die Teilnehmerzahl für die Lehrveranstaltung begrenzt. Infolgedessen wird ein Auswahlprozess stattfinden. Die Bewerbung erfolgt über die Homepage des wbk (http://www.wbk.kit.edu/studium-und-lehre.php).

For organizational reasons the number of participants for the course is limited. Hence a selection process will take place. Applications are made via the homepage of wbk (http://www.wbk.kit.edu/studium-und-lehre.php).

Literature
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt. Ebenso wird auf gängie Fachliteratur verwiesen.

Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/). Additional reference to literature will be provided, as well.

T 3.301 Course: Laboratory Work Water Chemistry [T-CIWVT-103351]

Responsible: Dr. Gudrun Abbt-Braun
Prof. Dr. Harald Horn

Organisation: KIT Department of Chemical and Process Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Version
Examination of another type	4 CP	graded	1

Events					
WT 24/25	2233032	Practical Course: Water Quality and Water Assessment	2 SWS	Practical course / 🗣	Horn, Hille-Reichel, und Mitarbeitende

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

Prerequisites
none

T 3.302 Course: Large-scale Optimization [T-WIWI-106549]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	3

Events					
ST 2025	2550475	Large-Scale Optimization	2 SWS	Lecture /	Rebennack
ST 2025	2550476	Übung zu Large-Scale Optimization	1 SWS	Practice /	Bijiga, Rebennack
ST 2025	2550477	Rechnerübung zu Large-scale Optimization	2 SWS	Others (sons	Rebennack, Bijiga
Exams					
WT 24/25	7900244	Large-scale Optimization			Rebennack
ST 2025	7900291	Large-scale Optimization			Rebennack

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

Assessment
The assessment consists of a written exam (60 minutes). The exam takes place in every semester.

Prerequisites
None.

Workload
135 hours

T 3.303 Course: Laser in Automotive Engineering [T-MACH-105164]

Responsible: Dr.-Ing. Johannes Schneider
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	3

Events					
ST 2025	2182642	Laser Material Processing	2 SWS	Lecture / 🗣	Schneider
Exams					
WT 24/25	76-T-MACH-105164	Laser in Automotive Engineering			Schneider
ST 2025	76-T-MACH-105164	Laser in Automotive Engineering / Laser Material Processing			Schneider

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

Assessment
oral examination (30 min)

no tools or reference materials

Prerequisites
It is not possible, to combine this brick with brick Laser Material Processing [T-MACH-112763], brick Physical Basics of Laser Technology [T-MACH-109084] and brick Physical Basics of Laser Technology [T-MACH-102102]

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-MACH-102102 - Physical Basics of Laser Technology must not have been started.
2. The course T-MACH-112763 - Laser Material Processing must not have been started.

Recommendations
preliminary knowlegde in mathematics, physics and materials science

Additional Information
The course is offered in German.

Workload
120 hours

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

V Laser Material Processing

2182642, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Based on a short description of the physical basics of laser technology the lecture reviews the most important high power lasers and their various applications in automotive engineering. Furthermore the application of laser light in metrology and safety aspects will be addressed.

- physical basics of laser technology
- laser beam sources (Nd:YAG-, CO2-, high power diode-laser)
- beam properties, guiding and shaping
- basics of materials processing with lasers
- laser applications in material processing
- savety aspects

The student

- can explain the principles of light generation, the conditions for light amplification as well as the basic structure and function of Nd:YAG-, CO2- and high power diode-laser sources.
- can describe the most important methods of laser-based processing in automotive engineering and illustrate the influence of laser, material and process parameters
- can analyse manufacturing problems and is able to choose a suitable laser source and process parameters.
- can explain the requirements for safe handling of laser radiation and for the design of safe laser systems.

Basic knowledge of physics, chemistry and material science is assumed.

It is not possible, to combine this lecture with the lecture *Physical basics of laser technology* [2181612].

regular attendance: 22,5 hours
self-study: 97,5 hours

oral examination (ca. 30 min)

no tools or reference materials

Organizational issues
Die Vorlesung ersetzt die bisherige Vorlesung "Lasereinsatz im Automobilbau" und wird jetzt auf Englisch angeboten!

The lecture replaces the previous lecture "Laser Application in Automotive Engineering" and is now offered in English!

Literature
W. T. Silvast: Laser Fundamentals, 2004, Cambridge University Press

J. Eichler, H.-J. Eichler: Laser - Basics, Advances, Applications, 2018, Springer

P. Poprawe: Tailored Light 1, 2018, Springer

K. F. Renk: Basics of Laser Physics, 2017, Springer

M. W. Sigrist: Laser: Theorie, Typen und Anwendungen, 2018, Springer-Spektrum

H. Hügel, T. Graf: Materialbearbeitung mit Laser, 2022, Springer Vieweg

T. Graf: Laser - Grundlagen der Laserstrahlquellen, 2009, Vieweg-Teubner Verlag

R. Poprawe: Lasertechnik für die Fertigung, 2005, Springer

T 3.304 Course: Laser Material Processing [T-MACH-112763]

Responsible: Dr.-Ing. Johannes Schneider
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2182642	Laser Material Processing	2 SWS	Lecture / 🗣	Schneider
Exams					
WT 24/25	76-T-MACH-112763	Laser Material Processing			Schneider
ST 2025	76-T-MACH-112763	Laser Material Processing			Schneider

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

Assessment
oral examination (30 min)

no tools or reference materials

Prerequisites
It is not possible, to combine this brick with Laser in Automotive Engineering [T-MACH-105164], brick Physical Basics of Laser Technology [T-MACH-109084] and brick Physical Basics of Laser Technology [T-MACH-102102].

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-MACH-102102 - Physical Basics of Laser Technology must not have been started.
2. The course T-MACH-105164 - Laser in Automotive Engineering must not have been started.

Recommendations
preliminary knowlegde in mathematics, physics and materials science

Additional Information
The course is offered in English.

Workload
120 hours

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

V Laser Material Processing

2182642, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Based on a short description of the physical basics of laser technology the lecture reviews the most important high power lasers and their various applications in automotive engineering. Furthermore the application of laser light in metrology and safety aspects will be addressed.

- physical basics of laser technology
- laser beam sources (Nd:YAG-, CO2-, high power diode-laser)
- beam properties, guiding and shaping
- basics of materials processing with lasers
- laser applications in material processing
- savety aspects

The student

- can explain the principles of light generation, the conditions for light amplification as well as the basic structure and function of Nd:YAG-, CO2- and high power diode-laser sources.
- can describe the most important methods of laser-based processing in automotive engineering and illustrate the influence of laser, material and process parameters
- can analyse manufacturing problems and is able to choose a suitable laser source and process parameters.
- can explain the requirements for safe handling of laser radiation and for the design of safe laser systems.

Basic knowledge of physics, chemistry and material science is assumed.

It is not possible, to combine this lecture with the lecture *Physical basics of laser technology* [2181612].

regular attendance: 22,5 hours
self-study: 97,5 hours

oral examination (ca. 30 min)

no tools or reference materials

Organizational issues
Die Vorlesung ersetzt die bisherige Vorlesung "Lasereinsatz im Automobilbau" und wird jetzt auf Englisch angeboten!

The lecture replaces the previous lecture "Laser Application in Automotive Engineering" and is now offered in English!

Literature
W. T. Silvast: Laser Fundamentals, 2004, Cambridge University Press

J. Eichler, H.-J. Eichler: Laser - Basics, Advances, Applications, 2018, Springer

P. Poprawe: Tailored Light 1, 2018, Springer

K. F. Renk: Basics of Laser Physics, 2017, Springer

M. W. Sigrist: Laser: Theorie, Typen und Anwendungen, 2018, Springer-Spektrum

H. Hügel, T. Graf: Materialbearbeitung mit Laser, 2022, Springer Vieweg

T. Graf: Laser - Grundlagen der Laserstrahlquellen, 2009, Vieweg-Teubner Verlag

R. Poprawe: Lasertechnik für die Fertigung, 2005, Springer

T 3.305 Course: Laser Physics [T-ETIT-100741]

Responsible: Prof. Dr. Marc Eichhorn
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2301480	Laserphysics	2 SWS	Lecture /	Eichhorn
WT 24/25	2301481	Exercise for 2301480 Laserphysics	1 SWS	Practice /	Eichhorn
Exams					
WT 24/25	7301480	Laser Physics			Eichhorn

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

Assessment
The exam will be taken as an oral examination (about 20 minutes). The individual appointments for examination are offered at two previously determined dates.

Prerequisites
none

T 3.306 Course: Law of Contracts [T-INFO-101316]

Responsible: Dr. Alexander Hoff
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each summer term	2

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-INFO-102036 - Computer Contract Law must not have been started.

T 3.307 Course: Laws concerning Traffic and Roads [T-BGU-106615]

Responsible: Hon.-Prof. Dr. Dietmar Hönig
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	3 CP	graded	Each term	1 terms	1

Events					
ST 2025	6233803	Laws Concerning Traffic and Roads	2 SWS	Lecture / 🗣	Hönig

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

Assessment
written exam, 60 min.

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.308 Course: Lean Construction [T-BGU-108000]

Responsible: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	4,5 CP	graded	Each term	1 terms	1

Events					
WT 24/25	6241901	Lean Construction	4 SWS	Lecture / Practice (/ 🗣	Haghsheno, Mitarbeiter/innen
Exams					
WT 24/25	8246108000	Lean Construction			Haghsheno
ST 2025	8246108000	Lean Construction			Haghsheno

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

Assessment
written exam, 70 min.

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
140 hours

T 3.309 Course: Learning Factory “Global Production“ [T-MACH-105783]

Responsible: Prof. Dr.-Ing. Gisela Lanza
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	6 CP	graded	Each winter term	4

Events					
WT 24/25	2149612	Learning Factory “Global Production“	4 SWS	/	Lanza
Exams					
WT 24/25	76-T-MACH-105783	Learning Factory "Global Production"			Lanza

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

Assessment
Alternative test achievement (graded):

- Knowledge acquisition in the context of the seminar (4 achievements 20 min each) with weighting 40%.
- Interaction between participants with weighting 15%.
- Scientific colloquium (in groups of 3 students approx. 45 min each) with weighting 45%.

Prerequisites
none

Additional Information
The course is offered in German.

For organisational reasons, the number of participants for the course is limited to 20. As a result, a selection process will take place. Applications must be submitted via the wbk homepage (http://www.wbk.kit.edu/lernfabrik.php).

Due to the limited number of participants, advance registration is required.

Students should have previous knowledge in at least one of the following areas:

- Integrated Production Planning
- Global Production and Logistics
- Quality Management

Workload
180 hours

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

V Learning Factory “Global Production“

2149612, WS 24/25, 4 SWS, Language: German, Open in study portal **Blended (On-Site/Online)**

Content
The learning factory “Global Production“ serves as a modern teaching environment for the challenges of global production. To make this challenges come alive, students can run a production of electric motors under real production conditions.
The course is divided into e-learning units and presence dates. The e-learning units help to learn essential basics and to immerse themselves in specific topics (e.g. selection of location, supplier selection and planning of production networks). The focus of the presence appointments is the case-specific application of relevant methods for planning and control of production systems that are suitable for the location. In addition to traditional methods and tools to organize lean production systems (e.g. Kanban and JIT/ JIS, Line Balancing) the lecture in particular deals with site-specific quality assurance and scalable automation. Essential methods for quality assurance in complex production systems are taught and brought to practical experience by a Six Sigma project. In the area of scalable automation, it is important to find solutions for the adaption of the level of automation of the production system to the local production conditions (e.g. automated workpiece transport, integration of lightweight robots for process linking) and to implement them physically. At the same time safety concepts should be developed and implemented as enablers for human-robot collaboration.
The course also includes an excursion to the production plant for the manufacturing of electric motors of an industrial partner.

Main focus of the lecture:

- site selection
- site-specific factory planning
- site-specific quality assurance
- scalable automation
- supplier selection

Learning Outcomes:

The students are able to …

- evaluate and select alternative locations using appropriate methods.
- use methods and tools of lean management to plan and manage production systems that are suitable for the location.
- use the Six Sigma method and apply goal-oriented process management.
- select an appropriate level of automation of the production units based on quantitative variables.
- make use of well-established methods for the evaluation and selection of suppliers.
- apply methods for planning a global production network depending on company-specific circumstances to sketch a suitable network and classify and evaluating it according to specific criteria.
- apply the learned methods and approaches with regard to problem solving in a global production environment and able to reflect their effectiveness.

Workload:

e-Learning: ~ 24 h
regular attendence: ~ 36 h
self-study: ~ 60 h

Organizational issues
Termine werden über die Institutshomepage bekanntgegeben.

Aus organisatorischen Gründen ist die Teilnehmerzahl für die Lehrveranstaltung auf 20 Teilnehmer begrenzt. Infolgedessen wird ein Auswahlprozess stattfinden. Die Bewerbung erfolgt über die Homepage des wbk (http://www.wbk.kit.edu/studium-und-lehre.php)

Aufgrund der begrenzten Teilnehmerzahl ist eine Voranmeldung erforderlich.

Die Studierenden sollten Vorkenntnisse in mindestens einem der folgenden Bereiche haben:

- Integrierte Produktionsplanung
- Globale Produktion und Logistik
- Qualitätsmanagement

For organisational reasons, the number of participants for the course is limited to 20. As a result, a selection process will take place. Applications must be submitted via the wbk homepage (http://www.wbk.kit.edu/studium-und-lehre.php).

Due to the limited number of participants, advance registration is required.

Students should have previous knowledge in at least one of the following areas:

- Integrated Production Planning
- Global Production and Logistics
- Quality Management

Literature
Medien:
E-Learning Plattform ilias, Powerpoint, Fotoprotokoll. Die Medien werden über ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
E-learning platform ilias, powerpoint, photo protocol. The media are provided through ilias (https://ilias.studium.kit.edu/).

T 3.310 Course: Liberalised Power Markets [T-WIWI-107043]

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	5,5 CP	graded	Each winter term	3

Events					
WT 24/25	2581998	Liberalised Power Markets	2 SWS	Lecture / 🗣	Fichtner
WT 24/25	2581999	Übungen zu Liberalised Power Markets	2 SWS	Practice / 🗣	Signer, Fichtner, Beranek
Exams					
WT 24/25	7900160	Liberalised Power Markets NEW			Fichtner
ST 2025	7900205	Liberalised Power Markets NEW			Fichtner

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

Assessment
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).

Recommendations
None

Workload
165 hours

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

V Liberalised Power Markets

2581998, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content

1. Power markets in the past, now and in future

2. Designing liberalised power markets

2.1. Unbundling Dimensions of liberalised power markets
2.2. Central dispatch versus markets without central dispatch
2.3. The short-term market model
2.4. The long-term market model
2.5. Market flaws and market failure
2.6. Regulation in liberalised markets

3. The power (sub)markets

3.1 Day-ahead market
3.2 Intraday market
3.3 (Long-term) Forwards and futures markets
3.4 Emission rights market
3.5 Market for ancillary services
3.6 The “market” for renewable energies
3.7 Future market segments

4. Grid operation and congestion management

4.1. Grid operation
4.2. Congestion management

5. Market power

5.1. Defining market power
5.2. Indicators of market power
5.3. Reducing market power

6. Future market structures in the electricity value chain

1. Power markets in the past, now and in future

2. Designing liberalised power markets

2.2. Unbundling Dimensions of liberalised power markets
2.3. Central dispatch versus markets without central dispatch
2.4. The short-term market model
2.5. The long-term market model
2.6. Market flaws and market failure
2.7. Regulation in liberalised markets

3. The power (sub)markets

3.1 Day-ahead market
3.2 Intraday market
3.3 (Long-term) Forwards and futures markets
3.4 Emission rights market
3.5 Market for ancillary services
3.6 The “market” for renewable energies
3.7 Future market segments

4. Grid operation and congestion management

4.1. Grid operation
4.2. Congestion management

5. Market power

5.1. Defining market power
5.2. Indicators of market power
5.3. Reducing market power

6. Future market structures in the electricity value chain

Literature

Weiterführende Literatur:

Power System Economics; Steven Stoft, IEEE Press/Wiley-Interscience Press, 0-471-15040-1

T 3.311 Course: Life Cycle Assessment – Basics and Application Possibilities in an Industrial Context [T-WIWI-113107]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each winter term	1

Events					
WT 24/25	2581995	Life Cycle Assessment - Basics and Application Possibilities in an Industrial Context	2 SWS	Lecture / 🗣	Treml, Schultmann, Schneider
Exams					
WT 24/25	7981995	Life Cycle Assessment - Basics and Application Possibilities in an Industrial Context			Schultmann
ST 2025	7981995	Life Cycle Assessment - Basics and Application Possibilities in an Industrial Context			Schultmann

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

Assessment
The assessment consists of an oral (approx. 30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None.

Recommendations
None

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

V Life Cycle Assessment - Basics and Application Possibilities in an Industrial Context

Lecture (V) On-Site

2581995, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The lecture focuses on the analysis of the environmental impacts of products and processes using Life Cycle Assessment (short: LCA). Structure and steps are conveyed in detail and selected further developments are shown. In order to record the methodology and classify potential environmental impacts, the practical development of what has been learned is also focused on using LCA software and interactive formats.

Topics include:

- Significance and areas of application
- Calculation models
- Attributional/Consequential LCA
- Life Cycle Sustainability Assessment, Social LCA and Life Cycle Costing
- Limitations
- Development of a Case Study

Literature
werden in der Veranstaltung bekannt gegeben

T 3.312 Course: Logistics and Supply Chain Management [T-WIWI-102870]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each summer term	2

Events					
ST 2025	2581996	Logistics and Supply Chain Management	2 SWS	Lecture / 🗣	Schultmann, Rosenberg
Exams					
WT 24/25	7981996	Logistics and Supply Chain Management			Schultmann
ST 2025	7981996	Logistics and Supply Chain Management			Schultmann

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

Assessment
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.

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

V Logistics and Supply Chain Management

2581996, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Students are introduced to the methods and tools of logistics and supply chain management. They students learn the key terms and components of supply chains together with key economic trade-offs. In detail, students gain knowledge of decisions in supply chain management, such as facility location, supply chain planning, inventory management, pricing and supply chain cooperation. In this manner, students will gain knowledge in analyzing, designing and steering of decisions in the domain of logistics and supply chain management.

- Introduction: Basic terms and concepts
- Facility location and network optimization
- Supply chain planning I: flexibility
- Supply chain planning II: forecasting
- Inventory management & pricing
- Supply chain coordination I: the Bullwhip-effect
- Supply chain coordination II: double marginalization
- Supply chain risk management

Literature
Wird in der Veranstaltung bekannt gegeben.

T 3.313 Course: Logistics and Supply Chain Management [T-MACH-110771]

Responsible: Prof. Dr.-Ing. Kai Furmans
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	9 CP	graded	Each summer term	5

Events					
ST 2025	2118078	Logistics and Supply Chain Management	4 SWS	Lecture / 🗣	Furmans, Alicke
Exams					
ST 2025	76-T-MACH-110771	Logistics and Supply Chain Management			Furmans

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

Assessment
The success control takes place in the form of an examination performance of a different kind. This is composed as follows:

- 50% assessment of a written examination (60 min) during the semester break
- 50% assessment of an oral examination (20 min) during the semester break

To pass the examination, both examination performances must be passed.

Prerequisites
None

Additional Information
The brick cannot be taken if one of the bricks "T-MACH-102089 – Logistics - Organisation, Design and Control of Logistic Systems" and "T-MACH-105181 – Supply Chain Management" has been taken.

Workload
270 hours

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

V Logistics and Supply Chain Management

2118078, SS 2025, 4 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
In the lecture "Logistics and Supply Chain Management", comprehensive and well-founded fundamentals of crucial issues in logistics and supply chain management are presented. Furthermore, the interaction of different design elements of supply chains is emphasized. For this purpose, both qualitative and quantitative models are presented and applied. Additionally, methods for mapping and evaluating logistics systems and supply chains are described. The contents of the lecture are deepened in exercises and case studies and comprehension is partially reviewed in case studies. The contents will be illustrated, among other things, on the basis of supply chains in the automotive industry.

Among others, the following topics are covered:

- Inventory Management
- Forecasting
- Bullwhip Effect
- Supply Chain Segmentation and Collaboration
- Key Performance Indicators
- Supply Chain Risk Management
- Production Logistics
- Location Planning
- Route Planning

It is intended to provide an interactive format in which students can also contribute (and work alone or in groups). Since logistics and supply chain management requires working in an international environment and therefore many terms are derived from English, the lecture will be held in English.

Plenary: The plenary sessions take place on Mondays from 09:45 - 13:00 and from 14:00 - 17:15.

Exercises: There are a total of five exercise sessions, which take place on Thursdays from 2:00 p.m. to 3:30 p.m. The scheduling can be found in Ilias from 20 April 2025.
Examination dates: This is a different type of examination. The written exam is scheduled to take place on 8 August 2025 from 8:00 a.m. to 9:00 a.m. The oral exams are scheduled for the two weeks before that. An oral exam lasts 20 minutes.
Contact persons: In the summer semester 2024, the contact persons for organisational matters are Etienne Hoffmann and Alexander Ernst. Please contact us at
log-scm∂ifl.kit.edu

T 3.314 Course: Long-Distance and Air Traffic [T-BGU-106301]

Responsible: Prof. Dr.-Ing. Peter Vortisch
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	3 CP	graded	Each term	1 terms	1

Events					
WT 24/25	6232904	Long-distance and Air Transportation	2 SWS	Lecture /	Vortisch, Dozenten
Exams					
WT 24/25	8245106301	Long-distance and Air Traffic			Vortisch
ST 2025	8245106301	Long-distance and Air Traffic			Chlond

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

Assessment
written exam, 60 min.

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
90 hours

T 3.315 Course: Low Power Design [T-INFO-101344]

Responsible: Prof. Dr.-Ing. Jörg Henkel
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Oral examination	3 CP	graded	Each summer term	1

Events					
ST 2025	2424672	Low Power Design	2 SWS	Lecture / 🗣	Henkel, Nassar, Khdr
Exams					
WT 24/25	7500139	VL: Low Power Design			Henkel
ST 2025	7500200	VL: Low Power Design			Henkel

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

Assessment
The assessment is carried out as an oral examination lasting 25-30 minutes, in accordance with Section 4 (2) No. 2 SPO.

Prerequisites
None.

Recommendations
- Basic knowledge from the modules “Design and Architectures of Embedded Systems (ESII)” and “Optimization and Synthesis of Embedded Systems (ESI)” are helpful but not essential for understanding of this lecture.
- The lecture is equally suitable for students from both computer science as well as electrical engineering department.
- The Lab of “Low Power Design and Embedded Systems” enables students to apply some of the theoretical knowledge gained from the lecture in practice.

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

V Low Power Design

2424672, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Smart embedded devices driven by advances in fields as diverse as automotive smart home, to high-tech like lithography or battery technology for IoT devices are now omnipresent in our lives. Today’s consumers have very high expectations from the embedded devices they own. Many emerging technologies such as virtual reality, robotics and artificial intelligence are limited in scope only by the performance of the underlying embedded devices. Unfortunately, performance of embedded devices is inherently constrained both by their limited cost, size as well as heat dissipating capacity and their limited on-board battery. The fact that all contemporary smartphones have multi-core chips running at low frequencies instead of single-core chips running at high frequencies can be attributed directly to the power consumption constraints imposed on them.

The constraints mandate highly optimized hardware-software co-design techniques for embedded devices that allows extraction of maximum performance with minimal power consumption. A good low power design requires all three building blocks of an embedded device – hardware, software and operating system – to work together synergistically. The lectures cover all the three aspects alongside their interactions from a low power design perspective in depth.

The lecture provides an overview of design methods, synthesis tools, estimation models, software techniques, operating system strategies, scheduling algorithms, etc., with the aim of minimizing the power consumption of embedded devices without compromising their performance. Both the research-relevant and industry-prevalent topics at different level of abstractions (from circuit to system) are discussed in this lecture.

Recommendations: Module “Entwurf und Architekturen für eingebettete Systeme”. Basic knowledge from the module “Optimierung und Synthese Eingebetteter Systeme” is helpful but not essential for understanding of this lecture. The lecture is equally suitable for students from both computer science as well as electrical engineering department.

Students are made aware of various low power design optimizations employed in state-of-the-art embedded devices. At the end of the lecture, the students will be able to recognize the challenges involved in crafting efficient low power designs and how to tackle them.

T 3.316 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-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	4

Events					
WT 24/25	2511500	Machine Learning 1 - Fundamental Methods	2 SWS	Lecture / 🗣	Zöllner
WT 24/25	2511501	Exercises to Machine Learning 1 - Fundamental Methods	1 SWS	Practice / 🗣	Zöllner, Polley, Fechner, Daaboul
Exams					
WT 24/25	7900371	Machine Learning 1 - Basic Methods			Zöllner
WT 24/25	79AIFB_ML1_C5	Machine Learning 1 - Basic Methods			Zöllner
ST 2025	79AIFB_ML1_C4	Machine Learning 1 - Basic Methods (Registration until 21.07.2025)			Zöllner

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

Assessment
Depending on further pandemic developments, the exam will be offered either as an open-book exam, or as a written exam (60 min):

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

A grade bonus can be earned by successfully completing practice exercises. If the grade of the written exam is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites
None.

Workload
150 hours

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

V Machine Learning 1 - Fundamental Methods

2511500, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The course prepares students for the rapidly evolving field of machine learning by providing a solid foundation, covering core concepts and techniques to get started in the field. Students delve into different methods in supervised, unsupervised, and reinforcement learning, as well as various model types, ranging from basic linear classifiers to more complex methods, such as deep neural networks. Topics include general learning theory, support vector machines, decision trees, neural network fundamentals, convolutional neural networks, recurrent neural networks, unsupervised learning, reinforcement learning, and Bayesian learning.

The course is accompanied by a corresponding exercise, where students gain hands-on experience by implementing and experimenting with different machine learning algorithms, helping them to apply machine learning algorithms on real world problems.

By the end of the course, students will have acquired a solid foundation in machine learning, enabling them to apply state-of-the-art algorithms to solve complex problems, contribute to research efforts, and explore advanced topics in the field.

Learning obectives:

- 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 of machine learning.

Literature
Die Foliensätze sind als PDF verfügbar

Weiterführende Literatur

- Machine Learning - Tom Mitchell
- Deep Learning - Ian Goodfellow, Yoshua Bengio, Aaron Courville
- Pattern Recognition and Machine Learning - Christopher M. Bishop
- Artificial Intelligence: A Modern Approach - Peter Norvig and Stuart J. Russell
- Reinforcement Learning: An Introduction - Richard S. Sutton and Andrew G. Barto

Weitere (spezifische) Literatur zu einzelnen Themen wird in der Vorlesung angegeben.

T 3.317 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-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	4

Events					
ST 2025	2511502	Machine Learning 2 - Advanced Methods	2 SWS	Lecture / 🗣	Zöllner, Fechner, Polley, Stegmaier
ST 2025	2511503	Exercises for Machine Learning 2 - Advanced Methods	1 SWS	Practice / 🗣	Zöllner, Fechner, Polley, Stegmaier
Exams					
WT 24/25	79AIFB_ML2_B8	Machine Learning 2 – Advanced Methods			Zöllner
ST 2025	79AIFB_ML2_Deutsch	Machine Learning 2 – Advanced Methods (written exam in German, registration until 21.07.2025)			Zöllner
ST 2025	79AIFB_ML2_English	Machine Learning 2 – Advanced Methods (written exam in English, registration until 21.07.2025)			Zöllner

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

Assessment
Depending on further pandemic developments, the exam will be offered either as an open-book exam, or as a written exam (60 min).

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

Prerequisites
None.

Workload
150 hours

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

V Machine Learning 2 - Advanced Methods

2511502, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

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

The lecture "Machine Learning 2" deals with modern advanced methods of machine learning such as semi-supervised, self-supervised and active learning, deep neural networks (deep learning, CNNs, GANs, diffusion models, transformer, adversarial attacks) and hierarchical approaches, e.g. reinforcement learning. Another focus is the embedding and application of machine learning methods in real systems.

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

Learning objectives:

- Students understand extended concepts of machine learning and their possible applications.
- Students can classify, formally describe and evaluate methods of machine learning.
- In detail, methods of machine learning can be embedded and applied in complex decision and inference systems.
- Students can use their knowledge to select suitable models and methods of machine learning for existing problems in the field of machine intelligence.

Recommendations:

Attending the lecture ***Machine Learning 1*** or a comparable lecture is very helpful in understanding this lecture.

Literature
Die Foliensätze sind als PDF verfügbar

Weiterführende Literatur

- Deep Learning - Ian Goodfellow
- Artificial Intelligence: A Modern Approach - Peter Norvig and Stuart J. Russell
- Machine Learning - Tom Mitchell
- Pattern Recognition and Machine Learning - Christopher M. Bishop
- Reinforcement Learning: An Introduction - Richard S. Sutton and Andrew G. Barto
- Deep Learning - Ian Goodfellow, Yoshua Bengio, Aaron Courville

Weitere (spezifische) Literatur zu einzelnen Themen wird in der Vorlesung angegeben.

T 3.318 Course: Machine Learning and Optimization in Energy Systems [T-WIWI-113073]

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each winter term	4

Events					
WT 24/25	2581050	Machine Learning and Optimization in Energy Systems	3 SWS	Lecture / Practice (/ 🗣	Dengiz, Yilmaz
Exams					
WT 24/25	7900179	Machine Learning and Optimization in Energy Systems			Fichtner
ST 2025	7900207	Machine Learning and Optimization in Energy Systems			Fichtner

Legend: 🖳 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
The assessment of this course is a written examination (60 min) or an oral exam (30 min) depending on the number of participants.

Workload
105 hours

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

V Machine Learning and Optimization in Energy Systems

2581050, WS 24/25, 3 SWS, Language: English, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
Goals:
Participants should know about the most common optimization and machine learning approaches for the application in energy systems. They should understand the basic principles of the methods and should be able to apply them for solving important problems of future energy systems with high shares of renewable energy sources.

Content:
In the beginning, the essential transition of the energy system into a smart grid and the need for methods from the field of optimization and machine learning are explained. The course can be subdivided into an optimization part and a larger machine learning part. In the optimization part, the basics of optimization approaches that are used in energy systems are shown. Further, heuristic methods and approaches from the field of multiobjective optimization are introduced. In the machine learning part, the most important methods from the field of unsupervised learning, supervised learning and reinforcement learning are introduced and their application in future energy systems are investigated.

Amongst the considered applications are power plant dispatch, intelligent heating with heat pumps, charging strategies for electric vehicles, clustering of energy data for energy system models and electricity demand and renewable generation forecasting.

We also offer a voluntary computer exercise that deepens the understanding of the methods and applications covered in the lecture. The students will have the opportunity to solve problems from the energy domain by using optimization and machine learning approaches implemented in the programming language Python.

The course's general focus is on the application of the methods in the energy field and not on the mathematical details of the different approaches.

The total workload for this course is approximately 105 hours:

- Attendance: 30 hours
- Self-study: 30 hours
- Exam preparation: 45 hours

T 3.319 Course: Machine Tools and High-Precision Manufacturing Systems [T-MACH-110963]

Responsible: Prof. Dr.-Ing. Jürgen Fleischer
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	9 CP	graded	Each winter term	2

Events					
WT 24/25	2149910	Machine Tools and High-Precision Manufacturing Systems	6 SWS	Lecture / Practice (/ 🗣	Fleischer
Exams					
WT 24/25	76-T-MACH-110963-WING	Machine Tools and High-Precision Manufacturing Systems			Fleischer
ST 2025	76-T-MACH-110963-WING	Machine Tools and High-Precision Manufacturing Systems			Fleischer

Legend: 🖳 Online, 🌣 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
Oral exam (approx. 45 minutes)

Prerequisites
T-MACH-102158 - Machine Tools and Industrial Handling must not be commenced.
T-MACH-109055 - Machine Tools and Industrial Handling must not be commenced.
T-MACH-110962 - Machine Tools and High-Precision Manufacturing Systems must not be commenced.

Additional Information
The course is offered in German.

Workload
270 hours

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

V Machine Tools and High-Precision Manufacturing Systems

2149910, WS 24/25, 6 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
The lecture gives an overview of the construction, use and application of machine tools and high-precision manufacturing systems. In the course of the lecture a well-founded and practice-oriented knowledge for the selection, design and evaluation of machine tools and high-precision manufacturing systems is conveyed. First, the main components of the systems are systematically explained and their design principles as well as the integral system design are discussed. Subsequently, the use and application of machine tools and high-precision manufacturing systems will be demonstrated using typical machine examples. Based on examples from current research and industrial applications, the latest developments are discussed, especially concerning the implementation of Industry 4.0 and artificial intelligence.
Guest lectures from industry round off the lecture with insights into practice.

The individual topics are:

- Structural components of dynamic manufacturing Systems
- Feed axes: High-precision positioning
- Spindles of cutting machine Tools
- Peripheral Equipment
- Machine control unit
- Metrological Evaluation
- Maintenance strategies and condition Monitoring
- Process Monitoring
- Development process for machine tools and high-precision manufacturing Systems
- Machine examples

Learning Outcomes:

The students …

- are able to assess the use and application of machine tools and high-precision manufacturing systems and to differentiate between them in terms of their characteristics and design.
- can describe and discuss the essential elements of machine tools and high-precision manufacturing systems (frame, main spindle, feed axes, peripheral equipment, control unit).
- are able to select and dimension the essential components of machine tools and high-precision manufacturing systems.
- are capable of selecting and evaluating machine tools and high-precision manufacturing systems according to technical and economic criteria.

Workload:

MACH:
regular attendance: 63 hours
self-study: 177 hours
WING/TVWL:
regular attendance: 63 hours
self-study: 207 hours

Organizational issues
Vorlesungstermine montags und mittwochs, Übungstermine donnerstags.
Bekanntgabe der konkreten Übungstermine erfolgt in der ersten Vorlesung.

Lectures on Mondays and Wednesdays, tutorial on Thursdays.
The tutorial dates will announced in the first lecture.

Zur Vertiefung des im Rahmen der Lehrveranstaltung erworbenen Wissens werden die theoretischen Vorlesungseinheiten durch Praxiseinheiten im Umfeld der Karlsruher Forschungsfabrik (https://www.karlsruher-forschungsfabrik.de) unterstützt.

The theoretical lectures are complemented by practical lectures in the Karlsruhe Research Factory (https://www.karlsruher-forschungsfabrik.de/en.html) to deepen the acquired knowledge.

Literature
Medien:
Skript zur Veranstaltung wird über Ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.320 Course: Macroeconomic Theory [T-WIWI-109121]

Responsible: Prof. Dr. Johannes Brumm
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	3

Events					
WT 24/25	2560404	Macroeconomic Theory	2 SWS	Lecture / 🗣	Brumm
WT 24/25	2560405	Übung zu Macroeconomic Theory	1 SWS	Practice / 🗣	Pegorari
Exams					
WT 24/25	7900066	Macroeconomic Theory			Brumm
WT 24/25	7900264	Macroeconomic Theory			Brumm

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

Assessment
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None.

Workload
135 hours

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

V Macroeconomic Theory

2560404, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
This course introduces a modern approach to macroeconomics by building on microeconomic principles. To be able to rigorously address key macroeconomic questions a general framework based on intertemporal decision making is introduced. Starting by the principles of consumer and firm behavior, this framework is successively expanded by introducing market imperfections, monetary factors as well as international trade. With this framework at hand students are able to analyze labor market policies, government deficits, monetary policy, trade policy, and other important macroeconomic problems. Throughout the course, we not only point out the power of theory but also its limitations.

Literature
Literatur und Skripte werden in der Veranstaltung angegeben.

T 3.321 Course: Management Accounting 1 [T-WIWI-102800]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	2

Events					
ST 2025	2579900	Management Accounting 1	2 SWS	Lecture /	Wouters
ST 2025	2579901	Tutorial Management Accounting 1 (Bachelor)	2 SWS	Practice /	Dickemann
ST 2025	2579902	Tutorial Management Accounting 1 (Master)	2 SWS	Practice /	Dickemann
Exams					
WT 24/25	79-2579900-B	Management Accounting 1 (Bachelor)			Wouters
WT 24/25	79-2579900-M	Management Accounting 1 (Mastervorzug und Master)			Wouters
ST 2025	79-2579900-B	Management Accounting 1 (Bachelor)			Wouters
ST 2025	79-2579900-M	Management Accounting 1 (Mastervorzug und Master)			Wouters

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

Assessment
The assessment consists of a written exam (120 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Recommendations
We recommend that you take part in our exercise for the lecture.

Additional Information
The exercise is offered separately for Bachelor's students as well as for students in the Master's transfer and Master's program.

Note for exam registration:

- Bachelor students: 79-2579900-B Management Accounting 1 (Bachelor)
- Students in the Master's transfer and Master's program: 79-2579900-M Management Accounting 1 (Master's transfer and Master)

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

V Management Accounting 1

2579900, SS 2025, 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.

V Tutorial Management Accounting 1 (Bachelor)

Practice (Ü)
On-Site

2579901, SS 2025, 2 SWS, Language: English, Open in study portal

Content
see Module Handbook

V Tutorial Management Accounting 1 (Master)

Practice (Ü)
On-Site

2579902, SS 2025, 2 SWS, Language: English, Open in study portal

Content
see Module Handbook

T 3.322 Course: Management Accounting 2 [T-WIWI-102801]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	2

Events					
WT 24/25	2579903	Management Accounting 2	2 SWS	Lecture /	Wouters
WT 24/25	2579904	Tutorial Management Accounting 2 (Bachelor)	2 SWS	Practice /	Letmathe
WT 24/25	2579905	Tutorial Management Accounting 2 (Master)	2 SWS	Practice /	Letmathe
Exams					
WT 24/25	79-2579903-B	Management Accounting 2 (Bachelor)			Wouters
WT 24/25	79-2579903-M	Management Accounting 2 (Mastervorzug und Master)			Wouters
ST 2025	79-2579903-B	Management Accounting 2 (Bachelor)			Wouters
ST 2025	79-2579903-M	Management Accounting 2 (Mastervorzug und Master)			Wouters

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

Assessment
The assessment consists of a written exam (120 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None

Recommendations
It is recommended:

- to take part in the course "Management Accounting1" before this course
- participation in the exercise for the lecture "Management Accounting 2"

Additional Information
The exercise for the lecture is offered separately for Bachelor's students as well as for students in the Master's transfer and Master's program.

Note for exam registration: Bachelor students:

- 79-2579903-B Management Accounting 2 (Bachelor)
- Students in the Master's transfer and Master's program: 79-2579903-M Management Accounting 2 (Master's transfer and Master)

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

V Management Accounting 2

2579903, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

Content
The course covers topics in management accounting in a decision-making framework. Some of these topics in the course MA2 are: cost estimation, product costing and cost allocation, financial performance measures, transfer pricing, strategic performance measurement systems.

We will use international material written in English.

We will approach these topics primarily from the perspective of the users of financial information (not so much from the controller who prepares the information).

The course builds on an introductory level of understanding of accounting concepts from Business Administration courses in the core program. The course is intended for students in Industrial Engineering.

Learning objectives:

- Students have an understanding of theory and applications of management accounting topics. They can use financial information for various purposes in organizations.

Recommendations:

- It is recommended to take part in the course "Management Accounting 1" before this course.

Examination:

- The assessment consists of a written exam (120 min) at the end of each semester (following § 4 (2) No. 1 of the examination regulation).

Workload:

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

Literature

- Marc Wouters, Frank H. Selto, Ronald W. Hilton, Michael W. Maher: Cost Management – Strategies for Business Decisions, 2012, Verlag: McGraw-Hill Higher Education (ISBN-13 9780077132392 / ISBN-10 0077132394)
- Zusätzlich werden Artikel auf ILIAS zur Vergügung gestellt.

V **Tutorial Management Accounting 2 (Bachelor)** — **Practice (Ü) On-Site**
2579904, WS 24/25, 2 SWS, Language: English, Open in study portal

Content
see ILIAS

V **Tutorial Management Accounting 2 (Master)** — **Practice (Ü) On-Site**
2579905, WS 24/25, 2 SWS, Language: English, Open in study portal

Content
see ILIAS

T 3.323 Course: Management and Marketing [T-WIWI-111594]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each winter term	2

Events					
WT 24/25	2600023	Management	2 SWS	Lecture / 🗣	Nieken, Lindstädt, Terzidis
WT 24/25	2610026	Marketing	2 SWS	Lecture / 🗣	Klarmann
Exams					
WT 24/25	7900012	Management and Marketing			Nieken, Terzidis, Klarmann, Lindstädt
ST 2025	7900184	Management and Marketing			Nieken, Terzidis, Klarmann

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

Assessment
Written exam (90 min) on the two courses "Management" and "Marketing". The examination is offered at the beginning of each lecture-free period. Repeat examinations are possible at any regular examination date.

Prerequisites
None

Workload
150 hours

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

V Marketing

2610026, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Literature
Ausführliche Literaturhinweise werden in den Materialen zur Vorlesung gegeben.

T 3.324 Course: Management of IT-Projects [T-WIWI-113968]

Responsible: Dr. Sascha Alpers
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2511214	IT Project Management	2 SWS	Lecture / 🗣	Alpers
ST 2025	2511215	Exercise IT Project Management	1 SWS	Practice / 🗣	Rybinski
Exams					
ST 2025	7900302	IT Project Management (Registration until 21.07.2025)			Oberweis

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

Assessment
Success is assessed in the form of a written examination (written exam) lasting 60 minutes.

Workload
135 hours

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

V IT Project Management

2511214, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Contents:

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 infrastructur
- 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 appropiate to current project phases and project contexts,
- consider organisational and social impact factors.

Recommendations:

Knowledge about 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.

V Exercise IT Project Management

Practice (Ü)
On-Site

2511215, SS 2025, 1 SWS, Language: German, Open in study portal

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.

T 3.325 Course: Managing New Technologies [T-WIWI-102612]

Responsible: Dr. Thomas Reiß
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	see Annotations	2

Events					
ST 2025	2545003	Managing New Technologies	2 SWS	Lecture / 🗣	Reiß
Exams					
WT 24/25	7900189	Managing New Technologies			Reiß
ST 2025	7900169	Managing New Technologies			Reiß

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

Assessment
Success is assessed in the form of a written examination (60 minutes).

Prerequisites
None

Recommendations
None

Additional Information
The course is expected to be offered for the last time in the summer semester 2024.

Workload
90 hours

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

V Managing New Technologies

2545003, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
This lecture provides an overview of new technologies in the research areas of biotechnology, nanotechnology and neuroscience as well as basic concepts of technology management. Students should be able to present problems of technology assessment and early recognition of new technologies in a structured way and apply formal approaches to technology management issues in an appropriate manner.

Organizational issues
Bitte melden Sie sich für die Prüfung Nr. 7900169 an, das ist die Prüfungs-Nr. für die schriftliche Prüfung.

(Die Prüfungs-Nr. 7900235 ist eine mündliche Prüfung, zu der sich Studierende nur nach Aufforderung durch das EnTechnon Sekretariat anmelden sollen, wenn Studierende eine mündliche Prüfung haben.)

Literature

- Hausschildt/Salomo: Innovationsmanagement;
- Borchert et al.: Innovations- und Technologiemanagement;
- Specht/Möhrle: Gabler Lexikon Technologiemanagement

Die relevanten Auszüge und zusätzlichen Quellen werden in der Veranstaltung bekannt gegeben.

T 3.326 Course: Managing Organizations [T-WIWI-102630]

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each winter term	4

Events					
WT 24/25	2577902	Managing Organizations	2 SWS	Lecture / 🗣	Lindstädt
Exams					
WT 24/25	7900049	Managing Organizations			Lindstädt
ST 2025	7900066	Managing Organizations			Lindstädt

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

Assessment
The assessment will consist of a written exam (60 min) taking place at the beginning of the recess period (according to Section 4 (2), 2 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

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

V Managing Organizations

2577902, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
This course enables participants to make a sound assessment of existing organizational structures and regulations. Students learn concepts and models for designing organizational structures, regulating organizational processes, and managing organizational change.

Through intensive exposure to real-world case studies, students are encouraged to learn and apply strategic actions in real-world business settings. The course features an action-oriented approach and provides students with a realistic understanding of the possibilities and limitations of rational design approaches.

Content in Keywords:

- Fundamentals of organizational management: fundamental concepts and theoretical background knowledge
- Management of organizational structures and processes: Corporate headquarters, departmental organization, instruction structure and incentive systems
- Ideal organizational structures: organic vs. mechanistic, Mintzberg's types, relationship to strategy and 7S model
- Management of organizational change (change management): Change processes within an organization, management of revolutionary change

Structure:

Lectures in the course are available to students online as recordings, while class dates are reserved for active discussion of real-world case studies.

Learning Objectives:

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

- critically evaluate existing organizational structures and regulations
- compare alternative structural options in a practical setting and evaluate and interpret their effectiveness and efficiency
- analyze and evaluate change processes in organizational management
- apply theoretical knowledge in practical situations

Recommendations:

None.

Workload:

- Total workload for 3.5 credit points: approx. 105 hours
- Attendance time: 30 hours
- Self-study: 75 hours

Verification:

The assessment of success takes place in the form of a written examination (60min.) (according to §4(2), 1 SPO) at the beginning of the lecture-free period of the semester. The examination is offered every semester and can be repeated at any regular examination date.
A bonus can be earned through successful participation in the exercise. If the grade on the written exam 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 lecture.

Literature

- Laux, H.; Liermann, F.: *Grundlagen der Organisation*, Springer. 6. Aufl. Berlin 2005.
- Lindstädt, H.: *Organisation*, in Scholz, C. (Hrsg.): Vahlens Großes Personallexikon, Verlag Franz Vahlen. 1. Aufl. München, 2009.
- Schreyögg, G.: *Organisation. Grundlagen moderner Organisationsgestaltung*, Gabler. 4. Aufl. Wiesbaden 2003.

Die relevanten Auszüge und zusätzlichen Quellen werden in der Veranstaltung bekannt gegeben.

T 3.327 Course: Managing the Marketing Mix [T-WIWI-102805]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

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

Events					
ST 2025	2571152	Managing the Marketing Mix	2 SWS	Lecture / 🗣	Klarmann
ST 2025	2571153	Übung zu Marketing Mix (Bachelor)	1 SWS	Practice / 🗣	Daumann, Weber
Exams					
WT 24/25	7900061	Managing the Marketing Mix			Klarmann
ST 2025	7900023	Managing the Marketing Mix			Klarmann

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

Assessment
The assessment of success takes place through the preparation and presentation of a case study (max. 30 points) as well as a written exam with additional aids in the sense of an open book exam (max. 60 points). In total, a maximum of 90 points can be achieved in the course. Further details will be announced during the lecture.

Prerequisites
None

Additional Information
The course is compulsory in the module "Foundations of Marketing".
For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

Workload
135 hours

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

V Managing the Marketing Mix

2571152, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The content of this course concentrates on the elements of the marketing mix. Therefore the main chapters are brand management, pricing, promotion and sales management.

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

This course is compulsory within or the module "Foundations of Marketing" and must be examined.

Learning objectives:

student

- know the meaning of the branding, the brand positioning and the possibilities of the brand value calculation
- understand the price behavior of customers and can apply this knowledge to the practice
  know different methods for price determination (conjoint analysis, cost-plus determination, target costing, customer surveys, bidding procedures) and price differentiation
- are able to name and explain the relevant communication theories
- can identify crisis situations and formulate appropriate response strategies
- can name and judge different possibilities of the Intermediaplanung
- know various design elements of advertising communication
- understand the measurement of advertising impact and can apply it
- know the basics of sales organization
- are able to evaluate basic sales channel decisions

Workload:

The total workload for this course is approximately 135.0 hours.

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

T 3.328 Course: Manufacturing Technology [T-MACH-102105]

Responsible: Prof. Dr.-Ing. Volker Schulze
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	8 CP	graded	Each winter term	3

Events					
WT 24/25	2149657	Manufacturing Technology	6 SWS	Lecture / Practice (/	Schulze
Exams					
WT 24/25	76-T-MACH-102105	Manufacturing Technology			Schulze
ST 2025	76-T-MACH-102105	Manufacturing Technology			Schulze

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

Assessment
Written Exam (180 min)

Prerequisites
none

Workload
240 hours

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

V Manufacturing Technology
2149657, WS 24/25, 6 SWS, Language: German, Open in study portal
Lecture / Practice (VÜ)
Blended (On-Site/Online)

Content
The objective of the lecture is to look at manufacturing technology within the wider context of production engineering, to provide an overview of the different manufacturing processes and to impart detailed process knowledge of the common processes. The lecture covers the basic principles of manufacturing technology and deals with the manufacturing processes according to their classification into main groups regarding technical and economic aspects. The lecture is completed with topics such as process chains in manufacturing.

The following topics will be covered:

- Quality control
- Primary processing (casting, plastics engineering, sintering, additive manufacturing processes)
- Forming (sheet-metal forming, massive forming, plastics engineering)
- Cutting (machining with geometrically defined and geometrically undefined cutting edges, separating, abrading)
- Joining
- Coating
- Heat treatment and surface treatment
- Process chains in manufacturing

This lucture provides an excursion to an industry company.

Learning Outcomes:

The students ...

- are capable to specify the different manufacturing processes and to explain their functions.
- are able to classify the manufacturing processes by their general structure and functionality according to the specific main groups.
- have the ability to perform a process selection based on their specific characteristics.
- are enabled to identify correlations between different processes and to select a process regarding possible applications.
- are qualified to evaluate different processes regarding specific applications based on technical and economic aspects.
- are experienced to classify manufacturing processes in a process chain and to evaluate their specific influence on surface integrity of workpieces regarding the entire process chain.

Workload:

regular attendance: 63 hours
self-study: 177 hours

Organizational issues
Vorlesungstermine montags und dienstags, Übungstermine mittwochs.
Bekanntgabe der konkreten Übungstermine erfolgt in der ersten Vorlesung.

Die LV wird letztmalig im WS 2024/25 angeboten (Vorlesungsvideos bleiben online).

Die Prüfung wird für Erstschreiber letztmalig im SS 2025 und Wiederholer letztmalig im WS 2025/26 angeboten.

Literature
Medien:
Skript zur Veranstaltung wird über ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in ilias (https://ilias.studium.kit.edu/).

T 3.329 Course: Market Research [T-WIWI-107720]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	3

Events					
ST 2025	2571150	Market Research	2 SWS	Lecture / 🗣	Klarmann
ST 2025	2571151	Market Research Tutorial	1 SWS	Practice / 🗣	Klarmann
Exams					
WT 24/25	7900053	Market Research			Klarmann
ST 2025	7900015	Market Research			Klarmann

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

Assessment
The assessment of success takes place through a written exam (70 minutes) with additional aids in the sense of an open book exam. Further details will be announced during the lecture.

Prerequisites
None

Recommendations
None

Additional Information
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 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Within the lecture, essential statistical methods for measuring customer attitudes (e.g. satisfaction measurement), understanding customer behavior and making strategic decisions will be discussed. The practical use as well as the correct handling of different survey methods will be taught, such as experiments and surveys. To analyze the collected data, various analysis methods are presented, including hypothesis tests, factor analyses, cluster analyses, variance and regression analyses. Building on this, the interpretation of the results will be discussed.

Topics addressed in this course are for example:

- Theoretical foundations of market research
- Statistical foundations of market research
- Measuring customer attitudes
- Understanding customer reactions
- Strategical decision making

The aim of this lecture is to give an overview of essential statistical methods. In the lecture students learn the practical use as well as the correct handling of different statistical survey methods and analysis procedures. In addition, emphasis is put on the interpretation of the results after the application of an empirical survey. The derivation of strategic options is an important competence that is required in many companies in order to react optimally to customer needs.

The assessment is carried out (according to §4(2), 3 SPO) in the form of a written open book exam.

The total workload for this course is approximately 135.0 hours.

Presence time: 30 hours

Preparation and wrap-up of the course: 45.0 hours

Exam and exam preparation: 60.0 hours

Please note that this course has to be completed successfully by students interested in master thesis positions at the chair of marketing.

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

T 3.330 Course: Marketing Analytics [T-WIWI-103139]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each winter term	6

Events					
WT 24/25	2572170	Marketing Analytics	2 SWS	Lecture / 🗣	Klarmann
WT 24/25	2572171		1 SWS	Practice / 🗣	Martin
Exams					
WT 24/25	7900082	Marketing Analytics			Klarmann

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

Assessment
Alternative (according to §4(2), 3 of the examination regulation) exam assessment (working on tasks in groups during the lecture).

Prerequisites
The prerequisite for taking the course is the successful completion of the course "Market Research".

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-WIWI-107720 - Market Research must have been started.

Recommendations
It is strongly recommended to complete the course "Market Research" prior to taking the "Marketing Analytics" course.

Additional Information
"Marketing Analytics" is offered as a block course with an alternative exam assessment.
Starting in the winter semester 22/23, the course will be scheduled to be completed after two thirds of the semester. For further information, please contact the Marketing and Sales Research Group (marketing.iism.kit.edu). Exchange students can bypass the requirement of passing Market Research if they can prove that they possess sufficient statistical knowledge based on courses attended at their home institution. This will be examined individually by the Marketing and Sales Research Group.

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

V Marketing Analytics

2572170, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
In this course various relevant market research questions are addressed, as for example measuring and understanding customer attitudes, preparing strategic decisions and sales forecasting. In order to analyze these questions, students learn to handle social media data, panel data, nested observations and experimental design. To analyze the data, advanced methods, as for example multilevel modeling and return on marketing models are taught. Also, problems of causality are addressed in-depth. The lecture is accompanied by a computer-based exercise, in the course of which the methods are applied practically.

Students

- receive based on the course market research an overview of advanced empirical methods
- learn in the course of the lecture to handle advanced data collection and data analysis methods
- are based on the acquired knowledge able to interpret results and derive strategic implications

Total workload for 4.5 ECTS: ca. 135 hours.

In order to attend Marketing Analytics, students are required to have passed the course Market Research.

Exchange students can bypass the requirement of passing Market Research if they can prove that they possess sufficient statistical knowledge based on courses attended at their home institution. This will be examined individually by the Marketing & Sales Research Group.

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

Literature

- Hanssens, Dominique M., Parsons, Leonard J., Schultz, Randall L. (2003), Market response models: Econometric and time series analysis, 2nd ed, Boston.
- Gelman, Andrew, Hill, Jennifer (2006), Data analysis using regression and multilevel/hierarchical models, New York.
- Cameron, A. Colin, Trivedi, Pravin K. (2005), Microeconometrics: methods and applications, New York.
- Chapman, Christopher, Feit, Elea M. (2015), R for Marketing Research and Analytics, Cham.
- Ledolter, Johannes (2013), Data mining and business analytics with R, New York.

V 2572171, WS 24/25, 1 SWS, Language: English, Open in study portal **Practice (Ü) On-Site**

Content
Tasks parallel to the lecture to work on in a group of students.

Organizational issues
Blockveranstaltung: genaue Uhrzeiten und Raum werden noch bekannt gegeben

T 3.331 Course: Marketing Strategy Business Game [T-WIWI-102835]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	1,5 CP	graded	see Annotations	1

Assessment
The assessment (alternative exam assessment) consists of a group presentation and a subsequent round of questions totalling 20 minutes.

Prerequisites
None

Recommendations
None

Additional Information
This course is no longer offered.

Workload
45 hours

T 3.332 Course: Master's Thesis [T-WIWI-103142]

Responsible: Studiendekan der KIT-Fakultät für Informatik
Studiendekan des KIT-Studienganges
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101650 - Module Master's Thesis

Type	Credits	Grading	Version
Final Thesis	30 CP	graded	1

Assessment
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 3.333 Course: Matching Theory [T-WIWI-113264]

Responsible: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2500042	Matching Theory	3 SWS	Lecture / Practice (/	Okulicz
Exams					
WT 24/25	7900347	Matching Theory			Puppe
ST 2025	7900260	Matching Theory			Puppe

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

Assessment
Written examination (90 minutes)

Workload
135 hours

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

V Matching Theory

2500042, WS 24/25, 3 SWS, Language: English, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
How should we organize recruitment of students to schools? Could we improve the placement of doctors to hospitals? Why there always seems to be a better roommate to the one you currently have? Matching Theory answers all these questions and more. During the course we will formally study mathematical systems of allocating goods and people, and see their many real life applications from organizing kidney exchange to improving dating apps. The course will cover three main topics in Matching Theory and Market Design: (1) assignment problems (e.g., allocation of social housing), (2) two-sided matching (e.g., allocation of children to schools), (3) transferable-utility matching (e.g., labor market).

The students are expected to:

1. Understand the mathematical properties of allocations and commonly used mechanism
2. Understand the connection between Matching Theory and real-life allocation systems
3. Be able to use their knowledge to propose solutions for novel real-life problems

T 3.334 Course: Material Science II for Business Engineers [T-MACH-102079]

Responsible: Dr.-Ing. Susanne Wagner
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each summer term	1

Events					
ST 2025	2126782	Materials Science II for Business Engineers	2 SWS	Lecture / 🗣	Wagner
Exams					
WT 24/25	76-T-MACH-102079	Material Science II			Wagner, Schell, Bucharsky
ST 2025	76-T-MACH-102079	Material Science II for Business Engineers			Wagner, Schell, Bucharsky

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

Assessment
The assessment consists of a written examination (150 min) taking place in the recess period (according to Section 4(2), 1 of the examination regulation). The examination takes place every semester. Re-examinations are offered at every ordinary examination date. The examination at the end of the winter term is carried out by a written or oral exam.

Prerequisites
The module *Material Science* has to be completed beforehand.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module M-MACH-101260 - Materials Science must have been passed.

Workload
150 hours

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

V Materials Science II for Business Engineers

2126782, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Literature
Weiterführende Literatur:

- Werkstoffwissenschaften - Eigenschaften, Vorgänge, Technologien, B. Ilscher, Springer – Verlag, Berlin Heidelberg New York, ISBN 3-540-10725-5
- Werkstoffwissenschaften, Schatt, Werner / Worch, Hartmut (Hrsg.) Wiley-VCH, Weinheim, ISBN-10: 3-527-30535-1
- Metallkunde für das Maschinenwesen I/II, K.G. Schmitt-Thomas, Springer-Verlag, ISBN 3-540-51913-0
- Materials Science and Engineering – An Introduction, William D. Callister (Jr.), John Wiley & Son, ISBN-10: 978-0-471-73696-7

T 3.335 Course: Materials Science I [T-MACH-102078]

Responsible: Dr.-Ing. Susanne Wagner
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	1

Events					
WT 24/25	2125760	Materials Science I	2 SWS	Lecture /	Wagner
Exams					
WT 24/25	76-T-MACH-102078	Materials Science I			Wagner, Schell, Bucharsky
ST 2025	76-T-MACH-102078	Materials Science I			Wagner, Schell, Bucharsky

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

Assessment
The assessment consists of a written examination (150 min) taking place in the recess period (according to Section 4(2), 1 of the examination regulation). The examination takes place every semester. Re-examinations are offered at every ordinary examination date. The examination at the end of the summer term is carried out by a written or oral exam.

Prerequisites
None

Workload
90 hours

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

V Materials Science I

2125760, WS 24/25, 2 SWS, Language: German, Open in study portal

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

Literature
Weiterführende Literatur:

Werkstoffwissenschaften - Eigenschaften, Vorgänge, Technologien, B. Ilscher, Springer – Verlag, Berlin Heidelberg New York, ISBN 3-540-10725-5
Werkstoffwissenschaften, Schatt, Werner / Worch, Hartmut (Hrsg.) Wiley-VCH, Weinheim, ISBN-10: 3-527-30535-1
Metallkunde für das Maschinenwesen I/II, K.G. Schmitt-Thomas, Springer-Verlag, ISBN 3-540-51913-0
Materials Science and Engineering – An Introduction, William D. Callister (Jr.), John Wiley & Son, ISBN-10: 978-0-471-73696-7 .

T 3.336 Course: Mathematical Models and Methods for Production Systems [T-MACH-105189]

Responsible: Dr.-Ing. Marion Baumann
Prof. Dr.-Ing. Kai Furmans

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	6 CP	graded	Each winter term	1

Events					
WT 24/25	2117059	Mathematical models and methods for Production Systems	4 SWS	Lecture / Practice (/ 🗣	Baumann, Furmans
Exams					
WT 24/25	76-T-MACH-105189	Mathematical models and methods for Production Systems			Furmans, Baumann
WT 24/25	76-T-MACH-105189-02	Mathematical Models and Methods for Production Systems			Furmans, Baumann

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

Assessment
The assessment consists of an oral exam (20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Prerequisites
none

Workload
180 hours

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

V Mathematical models and methods for Production Systems

2117059, WS 24/25, 4 SWS, Language: English, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
Media:

black board, lecture notes, presentations

Learning Content:

- single server systems: M/M/1, M/G/1: priority rules, model of failures
- networks: open and closed approximations, exact solutions and approximations
- application to flexible manufacturing systems, AGV (automated guided vehicles) - systems
- modeling of control approaches like constant work in process (ConWIP) or kanban
- discrete-time modeling of queuing systems

Learning Goals:

Students are able to:

- Describe queueing systems with analytical solvable stochastic models,
- Derive approches for modeling and controlling material flow and production systems based on models of queueing theory,
- Use simulation and exakt methods.

Recommendations:

- Basic knowledge of statistic
- recommended compusory optional subject: Stochastics
- recommended lecture: Materials flow in logistic systems (also parallel)

Workload:

regular attendance: 42 hours
self-study: 198 hours

Organizational issues

- **Im Wintersemester 2024/2025 ist die Veranstaltung auf maximal 30 Teilnehmer beschränkt.**
- **Die Anmeldung erfolgt durch Beitritt zum ILIAS-Kurs und Ausfüllen des Anmeldungsformulars (erforderliche Felder beim Beitritt zum ILIAS-Kurs).**
- **Die Anmeldung ist vom 01.09.2024 bis zum 30.09.2024 möglich. Die verfügbaren Plätze werden anschließend vergeben.**

Die nächste Veranstaltung findet im Sommersemester 2026 statt!

Literature
Ronald W. Wolff (1989) Stochastic Modeling and the Theory of Queues, Englewood Cliffs, NJ : Prentice-Hall.
John A. Buzacott, J. George Shanthikumar (1993) Stochastic Models of Manufacturing Systems, Upper Saddle River, NJ : Prentice Hall.

T 3.337 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-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Oral examination	4,5 CP	graded	Irregular	1

Events					
ST 2025	2550562	Mathematische Grundlagen hochdimensionaler Statistik	2 SWS	Lecture / 🗣	Grothe
ST 2025	2550563	Übung zu Mathematische Grundlagen hochdimensionaler Statistik	2 SWS	Practice / 🗣	Grothe

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

Assessment
The assessment consists of an oral exam (approx. 30 min.) taking place in the recess period.

Prerequisites
None

Recommendations
Basic knowledge of mathematics and statistics is assumed.
Knowledge in multivariate statistics is an advantage, but not necessary for the course.

Additional Information
Teaching and learning format: Lecture and exercise

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

V Mathematische Grundlagen hochdimensionaler Statistik

2550562, SS 2025, 2 SWS, Open in study portal

Lecture (V)
On-Site

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 3.338 Course: Mathematics I - Final Exam [T-MATH-111493]

Responsible: Prof. Dr. Daniel Hug
Prof. Dr. Günter Last
Dr. Franz Nestmann
PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: M-WIWI-104905 - Mathematics

Type	Credits	Grading	Version
Written examination	5 CP	graded	1

Exams			
WT 24/25	00027	Mathematics I - Final Exam	Nestmann, Last, Winter
ST 2025	7700050	Mathematics I - Final Exam	Winter, Nestmann, Last

T 3.339 Course: Mathematics I - Midterm Exam [T-MATH-111492]

Responsible: Prof. Dr. Daniel Hug
Prof. Dr. Günter Last
Dr. Franz Nestmann
PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: M-WIWI-104905 - Mathematics

Type	Credits	Grading	Version
Written examination	5 CP	graded	1

Exams			
WT 24/25	00070	Mathematics I - Midterm Exam	Nestmann, Last, Winter
ST 2025	7700053	Mathematics I - Midterm Exam	Winter, Nestmann, Last

T 3.340 Course: Mathematics II - Final Exam [T-MATH-111496]

Responsible: Prof. Dr. Daniel Hug
Prof. Dr. Günter Last
Dr. Franz Nestmann
PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: M-WIWI-104905 - Mathematics

Type	Credits	Grading	Version
Written examination	3,5 CP	graded	1

Exams			
WT 24/25	00021	Mathematics II - Final Exam	Nestmann, Winter, Last
ST 2025	00022	Mathematics II - Final Exam	Nestmann, Winter, Last

T 3.341 Course: Mathematics II - Midterm Exam [T-MATH-111495]

Responsible: Prof. Dr. Daniel Hug
Prof. Dr. Günter Last
Dr. Franz Nestmann
PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: M-WIWI-104905 - Mathematics

Type	Credits	Grading	Version
Written examination	3,5 CP	graded	1

Exams			
WT 24/25	00020	Mathematics II - Midterm Exam	Nestmann, Winter, Last
ST 2025	00021	Mathematics II - Midterm Exam	Last, Winter, Nestmann

T 3.342 Course: Mathematics III - Final Exam [T-MATH-111498]

Responsible: Prof. Dr. Daniel Hug
Prof. Dr. Günter Last
Dr. Franz Nestmann
PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: M-WIWI-104905 - Mathematics

Type	Credits	Grading	Version
Written examination	4 CP	graded	1

Exams			
WT 24/25	6700051	Mathematics III - Final Exam	Nestmann, Winter, Last
ST 2025	7700064	Mathematics III - Final Exam	Winter, Last, Nestmann

T 3.343 Course: Measurement and Control Technology [T-ETIT-112852]

Responsible: Prof. Dr.-Ing. Michael Heizmann
Prof. Dr.-Ing. Sören Hohmann

Organisation: KIT Department of Electrical Engineering and Information Technology

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	6 CP	graded	Each summer term	1 terms	1

Events					
ST 2025	2302300	Measurement and Control Technology	2 SWS	Lecture / 🗣	Heizmann, Hohmann, Piscol, Schmerbeck
ST 2025	2302301	Practice to 2302300 Measurement and Control Technology	2 SWS	Practice / 🗣	Heizmann, Hohmann, Schmerbeck, Piscol
Exams					
ST 2025	7302300	Measurement and Control Technology			Heizmann, Hohmann

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

Assessment
The assessment of success takes place in the form of a written examination lasting 120 minutes. The module grade is the grade of the written examination.

Prerequisites
none

T 3.344 Course: Mechanical Design I and II - CIW [T-MACH-104739]

Responsible: Prof. Dr.-Ing. Sven Matthiesen
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	6 CP	graded	Each winter term	2

Exams			
WT 24/25	76-T-MACH-110363	Mechanical Design I and II	Matthiesen, Düser
ST 2025	76-T-MACH-110363	Mechanical Design I and II	Matthiesen

Assessment
Written Exam (90min) on the topics of MKLI and MKLII for CIW.

Prerequisites
The bricks "T-MACH-102132 - Maschinenkonstruktionslehre I, Vorleistung" and "T-MACH-102133 - Maschinenkonstruktionslehre II, Vorleistung" must be passed successfully.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-MACH-102133 - Mechanical Design II, Tutorial must have been passed.
2. The course T-MACH-102132 - Mechanical Design I, Tutorial must have been passed.

Additional Information
The course is offered in German.

Workload
90 hours

T 3.345 Course: Mechanical Design I, Tutorial [T-MACH-102132]

Responsible: Prof. Dr.-Ing. Sven Matthiesen
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework	1 CP	pass/fail	Each winter term	2

Exams			
WT 24/25	76-T-MACH-110364	Mechanical Design I, Tutorial	Matthiesen, Düser

Assessment
To pass the preliminary work, attendance at 3 workshop sessions of the MKL1 transmission workshop and the passing of a colloquium at the beginning of each workshop are prerequisites. In addition, participation in an online test is a prerequisite

Prerequisites
None

Additional Information
The course is offered in German.

Workload
30 hours

T 3.346 Course: Mechanical Design II, Tutorial [T-MACH-102133]

Responsible: Prof. Dr.-Ing. Sven Matthiesen
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework	1 CP	pass/fail	Each summer term	2

Exams			
ST 2025	76-T-MACH-110365	Mechanical Design II, Tutorial	Albers, Matthiesen, Düser

Assessment
IP-MATH-CIW-NWT: For passing the prerequisite it is necessary that a design task is successfully completed as a technical hand drawing

MIT: To pass the preliminary examination, attendance at workshop sessions and a colloquium at the beginning of each workshop are required.

Prerequisites
None

Additional Information
The course is offered in German.

Workload
30 hours

T 3.347 Course: Mechatronical Systems and Products [T-MACH-112647]

Responsible: Prof. Dr.-Ing. Sören Hohmann
Prof. Dr.-Ing. Sven Matthiesen
Organisation: KIT Department of Mechanical Engineering
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each winter term	2

Events					
WT 24/25	2303003	Exercises for 2303161 Mechatronical Systems and Products	1 SWS	Practice / 🗣	Matthiesen, Hohmann
WT 24/25	2303161	Mechatronical Systems and Products	2 SWS	Lecture / 🧩	Matthiesen, Hohmann
ST 2025	2303003	Exercises for 2303161 Mechatronical Systems and Products	1 SWS	Practice / 🗣	Matthiesen, Hohmann
ST 2025	2303161	Mechatronical Systems and Products	2 SWS	Lecture / 🧩	Matthiesen, Hohmann

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

Assessment
written exam (60 min)

Additional Information
The course is offered in German.

Workload
120 hours

T 3.348 Course: Media Management [T-WIWI-112711]

Responsible: Prof. Dr. Ann-Kristin Kupfer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2572192	Media Management	2 SWS	Lecture / 🗣	Kupfer
WT 24/25	2572193	Media Management Exercise	1 SWS	Practice / 🗣	Kopp
Exams					
WT 24/25	7900135	Media Management			Kupfer
ST 2025	7900004	Media Management			Kupfer

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

Assessment
Success is assessed in the form of an examination of another type. The following aspects are included in the assessment:

- Elaboration and presentation of a group task
- Written exam

Further details on the organization of the performance and the points system for the assessment will be announced in the lecture.

Prerequisites
None

Recommendations
Students are highly encouraged to actively participate in class.

Workload
135 hours

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

V Media Management

2572192, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Students learn the theoretical foundations of media management and its most important concepts. They learn both about the key characteristics of both media products and media markets. They further get to know essential business models of media markets. Special emphasis will be given to understanding media consumers and the marketing mix of media products. A tutorial offers the opportunity to apply the key learnings of the lecture.

The learning objectives are as follows:

- Getting to know the theoretical foundations of media management
- Evaluating strategies for media products and services as media-specific marketing mix instruments
- Fostering critical and analytical thinking skills and the application of knowledge to marketing problems
- Improvement of skills and competences in the area of project management within the framework of group work
- Improvement of foreign language skills (business English)

Total time required for 4.5 credit points: approx. 135 hours

Attendance time: 30 hours

Self-study: 105 hours

Organizational issues
Appointments to be announced.

T 3.349 Course: Metal Forming [T-MACH-105177]

Responsible: Prof. Dr.-Ing. Thomas Herlan
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	2

Events					
ST 2025	2150681	Metal Forming	2 SWS	Lecture / 🗣	Herlan
Exams					
ST 2025	76-T-MACH-105177	Metal Forming			Herlan

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

Assessment
Oral Exam (20 min)

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

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

V **Metal Forming** — **Lecture (V) On-Site**
2150681, SS 2025, 2 SWS, Language: German, Open in study portal

Content
At the beginning of the lecture the basics of metal forming are briefly introduced. The focus of the lecture is on massive forming (forging, extrusion, rolling) and sheet forming (car body forming, deep drawing, stretch drawing). This includes the systematic treatment of the appropriate metal forming Machines and the corresponding tool technology. Aspects of tribology, as well as basics in material science and aspects of production planning are also discussed briefly. The plastic theory is presented to the extent necessary in order to present the numerical simulation method and the FEM computation of forming processes or tool design. The lecture will be completed by product samples from the forming technology.

The topics are as follows:

- Introduction and basics
- Hot forming
- Metal forming machines
- Tools
- Metallographic fundamentals
- Plastic theory
- Tribology
- Sheet forming
- Extrusion
- Numerical simulation
- Sustainability in forming technology
- I4.0 and AI applications
- Production planning and quality assurance

Learning Outcomes:

The students …

- are able to reflect the basics, forming processes, tools, Machines and equipment of metal forming in an integrated and systematic way.
- are capable to illustrate the differences between the forming processes, tools, machines and equipment with concrete examples and are qualified to analyze and assess them in terms of their suitability for the particular application.
- are also able to transfer and apply the acquired knowledge to other metal forming problems.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Organizational issues
Vorlesungstermine freitags, wöchentlich.
Die konkreten Termine werden in der ersten Vorlesung bekannt gegeben und auf der Institutshomepage und ILIAS veröffentlicht.

Zur Vertiefung des im Rahmen der Lehrveranstaltung erworbenen Wissens werden die theoretischen Vorlesungseinheiten durch Praxiseinheiten im Umfeld der Karlsruher Forschungsfabrik (https://www.karlsruher-forschungsfabrik.de) unterstützt.

The theoretical lectures are complemented by practical lectures in the Karlsruhe Research Factory (https://www.karlsruher-forschungsfabrik.de/en.html) to deepen the acquired knowledge.

Literature
Medien:
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/)

T 3.350 Course: Methods and Models in Transportation Planning [T-BGU-101797]

Responsible: Prof. Dr.-Ing. Peter Vortisch
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each term	1 terms	1

Events					
WT 24/25	6232701	Calculation Methods and Models in Traffic Planning	2 SWS	Lecture / Practice (/ 🗣	Vortisch, Mitarbeiter/innen
Exams					
WT 24/25	8240101797	Methods and Models in Transportation Planning			Vortisch
ST 2025	8240101797	Methods and Models in Transportation Planning			Vortisch

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

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.351 Course: Methods in Economics [T-WIWI-114054]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Examination of another type	1,5 CP	graded	Each summer term	1

Exams			
ST 2025	7900108	Methods in Economics	Ott

Assessment
Alternative exam assessment.

Prerequisites
None

Recommendations
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 quantiative-mathematical methods.

T 3.352 Course: Microactuators [T-MACH-101910]

Responsible: Prof. Dr. Manfred Kohl
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	3

Events					
ST 2025	2142881	Microactuators	2 SWS	Lecture / 🗣	Kohl
Exams					
WT 24/25	76-T-MACH-101910	Microactuators			Kohl
ST 2025	7600030	Microactuators			Kohl
ST 2025	76-T-MACH-101910	Microactuators			Kohl

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

Assessment
written exam, 60 min.

Prerequisites
T-MACH-114036 must not be started

Workload
120 hours

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

V Microactuators

2142881, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
- Basic knowledge in the material science of the actuation principles
- Layout and design optimization
- Fabrication technologies
- Selected developments
- Applications

The lecture includes amongst others the following topics:

- Microelectromechnical systems: linear actuators, microrelais, micromotors
- Medical technology and life sciences: Microvalves, micropumps, microfluidic systems
- Microrobotics: Microgrippers, polymer actuators (smart muscle)
- Information technology: Optical switches, mirror systems, read/write heads

Literature
- Folienskript "Mikroaktorik"
- D. Jendritza, Technischer Einsatz Neuer Aktoren: Grundlagen, Werkstoffe, Designregeln und Anwendungsbeispiele, Expert-Verlag, 3. Auflage, 2008
- M. Kohl, Shape Memory Microactuators, M. Kohl, Springer-Verlag Berlin, 2004
- N.TR. Nguyen, S.T. Wereley, Fundamentals and applications of Microfluidics, Artech House, Inc. 2002
- H. Zappe, Fundamentals of Micro-Optics, Cambride University Press 2010

T 3.353 Course: Microeconometrics [T-WIWI-112153]

Responsible: Prof. Dr. Fabian Krüger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	see Annotations	1

Exams			
WT 24/25	7700004	Microeconometrics	Krüger

Assessment
The assessment consists of a written examination (60 minutes). A bonus can be acquired by successful completion of an assignment (written report + short in-class presentation) during the semester. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4).

Prerequisites
None

Recommendations
Students are expected to have a good working knowledge of the linear regression model (e.g. by having attended the course `Volkswirtschaftslehre III: Einführung in die Ökonometrie', or attending it in the same semester as `Microeconometrics').

Additional Information
The course will be offered in the summer semester 2024.

Workload
135 hours

T 3.354 Course: Microenergy Technologies [T-MACH-105557]

Responsible: Prof. Dr. Manfred Kohl
Dr. Jingyuan Xu

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2142897	Microenergy Technologies	2 SWS	Lecture / 🗣	Xu
Exams					
WT 24/25	76-T-MACH-105557	Microenergy Technologies			Kohl
ST 2025	76-T-MACH-105557	Microenergy Technologies			Kohl

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

Assessment
Oral examination (30 Min.)

Prerequisites
none

Workload
120 hours

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

V Microenergy Technologies

2142897, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
- Basic physical principles of energy conversion
- Layout and design optimization
- Technologies
- Selected devices
- Applications

The lecture includes amongst others the following topics:

- Micro energy harvesting of vibrations using different conversion principles (piezo, electrostatic, electromagnetic, etc.)
- Thermoelectric energy generation
- Novel thermal energy conversion principles (thermomagnetic, pyroelectric)
- Miniature scale solar devices
- RF energy harvesting
- Miniature scale heat pumping
- Solid-state cooling technologies (magneto-, electro-, mechanocalorics)
- Power management
- Energy storage technologies (microbatteries, supercapacito4rs, fuel cells)

Literature
- Folienskript "Micro Energy Technologies"
- Stephen Beeby, Neil White, Energy Harvesting for Autonomous Systems, Artech House, 2010
- Shashank Priya, Daniel J. Inman, Energy Harvesting Technologies, Springer, 2009

T 3.355 Course: Mixed Integer Programming I [T-WIWI-102719]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	1

Assessment
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

Recommendations
It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

Additional Information
The lecture is offered irregularly. The curriculum of the next three years is available online (kop.ior.kit.edu).

T 3.356 Course: Mixed Integer Programming II [T-WIWI-102720]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	1

Assessment
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

Recommendations
It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

Additional Information
The lecture is offered irregularly. The curriculum of the next three years is available online (kop.ior.kit.edu).

T 3.357 Course: Mobility Services and New Forms of Mobility [T-BGU-103425]

Responsible: PD Dr.-Ing. Martin Kagerbauer
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each term	1 terms	1

Events					
ST 2025	6232811	Mobility Services and New Forms of Mobility	2 SWS	Lecture / 🗣	Kagerbauer
Exams					
WT 24/25	8240103425	Mobility Services and new Forms of Mobility			Kagerbauer
ST 2025	8240103425	Mobility Services and new Forms of Mobility			Kagerbauer

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

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.358 Course: Model Based Application Methods [T-MACH-102199]

Responsible: Dr. Frank Kirschbaum
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Assessment
take-home exam, short presentation with oral examination

Prerequisites
none

T 3.359 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-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	4

Events					
WT 24/25	2550490	Modellieren und OR-Software: Fortgeschrittene Themen	3 SWS	Practical course / 🔗	Pomes, Linner, Nickel
Exams					
WT 24/25	7900071	Modeling and OR-Software: Advanced Topics			Nickel
ST 2025	7900188	Modeling and OR-Software: Advanced Topics			Nickel

Legend: 🖥 Online, 🔗 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
The assessment is a written examination. The examination is held in every semester. The prerequisite can only be obtained in semesters in which the course exercises are offered.

Prerequisites
Prerequisite for admission to the exam is the successful participation in the exercises. This includes the processing and presentation of exercises.

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

Successful completion of the course *Modeling and OR-Software: Introduction*.

Additional Information
Due to the limited number of participants, please register in advance. Further information can be found on the website of the course. Registration in WS 24/25 takes place via the Wiwi-Portal: https://portal.wiwi.kit.edu/ys/8209.
The course is offered every semester. The range of courses planned for three academic years in advance can be found on the Internet.

Workload
135 hours

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

V Modellieren und OR-Software: Fortgeschrittene Themen

2550490, WS 24/25, 3 SWS, Language: German, Open in study portal

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

Content
The advanced course is designated for Master students that already attended the introductory course or gained equivalent experience elsewhere, e.g. during a seminar or bachelor thesis. We will work on advanced topics and methods in OR, among others cutting planes, column generation and constraint programming. The Software used for the exercises is IBM ILOG CPLEX Optimization Studio. The associated modelling progamming languages are OPL and ILOG Script.

T 3.360 Course: Modeling and OR-Software: Introduction [T-WIWI-106199]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	4

Events					
ST 2025	2550490	Modellieren und OR-Software: Einführung	3 SWS	Practical course /	Nickel, Linner, Pomes, Subas
Exams					
WT 24/25	7900081	Modeling and OR-Software: Introduction			Nickel
ST 2025	7900153	Modeling and OR-Software: Introduction			Nickel

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

Assessment
The assessment is a written examination (60 min.). The examination is held in every semester.

Recommendations
Firm knowledge of the contents from the lecture *Introduction to Operations Research I* [2550040] of the module *Operations Research.*

Additional Information
Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The lecture is offered in every term. The planned lectures and courses for the next three years are announced online.

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

V Modellieren und OR-Software: Einführung

2550490, SS 2025, 3 SWS, Language: German, Open in study portal

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

Content
After an introduction to general concepts of modelling tools (implementation, data handling, result interpretation, …), the software IBM ILOG CPLEX Optimization Studio and the corresponding modeling language OPL will be discussed which can be used to solve OR problems on a computer-aided basis. Subsequently, a broad range of exercises will be discussed. The main goals of the exercises from literature and practical applications are to learn the process of modeling optimization problems as linear or mixed-integer programs, to efficiently utilize the presented tools for solving these optimization problems and to implement heuristic solution procedures for mixed-integer programs.

Organizational issues
Die Teilnehmerzahl für diese Veranstaltung ist begrenzt.

Die Bewerbung erfolgt über das Wiwi-Portal

Der Bewerbungszeitraum ist vom 07.03.25 bis zum 30.03.25.

Die Kick-Off Veranstaltung findet am 30.04.25 um 09:45 Uhr statt.

T 3.361 Course: Modeling and Simulation [T-WIWI-112685]

Responsible: Prof. Dr. Sanja Lazarova-Molnar
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2511100	Modeling and Simulation	2 SWS	Lecture	Lazarova-Molnar
ST 2025	2511101	Exercises Modeling and Simulation	1 SWS	Practice	Lazarova-Molnar, Mostafa
Exams					
WT 24/25	79AIFB_MaS_A6	Modeling and Simulation			Lazarova-Molnar
ST 2025	79AIFB_MaS_C6	Modeling and Simulation (Registration until 21.07.2025)			Lazarova-Molnar

Assessment
Depending on the number of participants in the course, the exam will be offered either as an oral exam (20 min), or as a written exam (60 min).

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

Prerequisites
None

Recommendations
Some experience in programming and knowledge of basic mathematics and statistics.

Additional Information
Instruction is in the form of lectures and exercises. A detailed course schedule will be published before the start of the semester.

Workload
135 hours

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

V Modeling and Simulation

2511100, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)

Content
Modeling and Simulation is the most widely used operations research / systems engineering technique for designing new systems and optimizing the performance of existing systems. In one way or another, just about every engineering or scientific field uses simulation as an exploration, modeling, or analysis technique. The course is designed to provide students with basic knowledge of modeling and simulation approaches and to provide them with first experience of using a simulation package. The course will focus on modeling and simulation of real-world discrete event systems. Examples of discrete events are customer arrivals at a queue of a service desk, machine failures in manufacturing systems, telephone calls in a call center, etc. Moreover, continuous and hybrid models will be also discussed. Topics include Discrete-Event Simulation, Input Modeling, Output Analysis, Random Number Generation, Verification and Validation, Stochastic Petri Nets and Markov Chains.

Competence Certificate

Depending on the number of participants in the course, the exam will be offered either as an oral exam (20 min), or as a written exam (60 min).

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

Learning Objectives

Knowledge:

- Demonstrate knowledge about general and specific theories, challenges, algorithms, methods, technologies, and tools related to modelling and simulation
- Demonstrate knowledge of two important classes of simulation:
    - Discrete-event Monte-Carlo simulation,
    - Continuous simulation with ODEs
- Demonstrate knowledge of algorithms necessary to build a simulator

Skills:

- Analyse suitability of an approach/tool for a given modelling problem
- Understand simulation models of various types
- Demonstrate methods and techniques to overcome common challenges in modelling and simulation
- Model simulation input data
- Analyse and model discrete stochastic systems
- Analyse and interpret simulation results

Competences:

- Use different methods to conduct simulation-based analysis of real-world data
- Build and simulate stochastic models
- Use simulation software

Prerequisites

Some experience in programming and knowledge of basic mathematics and statistics

Form of instruction

Lectures and exercises. A detailed course plan will be published before the semester start.

Literature
Discrete-Event System Simulation, 5th Edition

Jerry Banks, John S. Carson, II, Barry L. Nelson and David M. Nicol

T 3.362 Course: Modeling the Dynamics of Financial Markets [T-WIWI-113414]

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	9 CP	graded	Each summer term	1

Exams			
WT 24/25	7900024	Modeling the Dynamics of Financial Markets	Ulrich

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

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

Workload
270 hours

T 3.363 Course: Modelling and Identification [T-ETIT-100699]

Responsible: Prof. Dr.-Ing. Sören Hohmann
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Prerequisites
none

T 3.364 Course: Morphodynamics [T-BGU-101859]

Responsible: Prof. Dr. Mario Jorge Rodrigues Pereira da Franca
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each term	1 terms	1

Events					
ST 2025	6222805	Landscape and River Morphology	2 SWS	Lecture / Practice (/	Rodrigues Pereira da Franca, Vanzo

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

Prerequisites
none

Workload
90 hours

T 3.365 Course: Multicriteria Optimization [T-WIWI-111587]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	see Annotations	1

Events					
WT 24/25	2550155	Multicriteria Optimization	2 SWS	Lecture / 🗣	Stein
WT 24/25	2550156	Exercises Multicriteria Optimization		Practice / 🗣	Stein, Beck
Exams					
WT 24/25	7900009_WS2425_HK	Multicriteria Optimization			Stein
ST 2025	7900209_SS2025_NK	Multicriteria Optimization			Stein

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

Assessment
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

Recommendations
It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

Additional Information
The course is offered every second winter semester (starting WiSe 22/23). The curriculum of the next three years is available online (www.ior.kit.edu).

Contents:

Multicriteria optimization deals with optimization problems with multiple objective functions. In practice, the minimization or maximization of several objectives often conflict with each other, such as weight and stability of mechanical components, return and risk of stock portfolios, or cost and duration of transports. Various scalarization approaches allow one to formulate single-objective problems that can be solved using nonlinear or global optimization techniques, and whose optimal points have a reasonable interpretation for the underlying multicriteria problem.

However, some seemingly obvious scalarization approaches suffer from various drawbacks, so that regardless of scalarization approaches, it is necessary to clarify what is meant by the solution of a multicriteria optimization problem in the first place. For such Pareto-optimal points, optimality conditions and solution procedures based on them can be formulated. From the usually non-unique Pareto set, decision makers finally choose an alternative based on their subjective preferences.

The lecture gives a mathematically sound introduction to multicriteria optimization and is structured as follows:

- Introductory examples and terminology
- Solution concepts
- Methods for the determination of the Pareto set
- Selection of Pareto-optimal points under subjective preferences

Workload
135 hours

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

V Multicriteria Optimization

2550155, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Multicriteria optimization deals with optimization problems with multiple objective functions. In practice, the minimization or maximization of several objectives often conflict with each other, such as weight and stability of mechanical components, return and risk of stock portfolios, or cost and duration of transports. Various scalarization approaches allow one to formulate single-objective problems that can be solved using nonlinear or global optimization techniques, and whose optimal points have a reasonable interpretation for the underlying multicriteria problem.

However, some seemingly obvious scalarization approaches suffer from various drawbacks, so that regardless of scalarization approaches, it is necessary to clarify what is meant by the solution of a multicriteria optimization problem in the first place. For such Pareto-optimal points, optimality conditions and solution procedures based on them can be formulated. From the usually non-unique Pareto set, decision makers finally choose an alternative based on their subjective preferences.

The lecture gives a mathematically sound introduction to multicriteria optimization and is structured as follows:

- Introductory examples and terminology
- Solution concepts
- Methods for the determination of the Pareto set
- Selection of Pareto-optimal points under subjective preferences

Learning objectives:

The student

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

Literature

- M. Ehrgott, Multicriteria Optimization, Second Edition, Springer, Berlin, 2005
- J. Jahn, Vector Optimization, Second Edition, Springer, Berlin, 2011
- K. Miettinen, Nonlinear Multiobjective Optimization, Springer, New York, 2004
- Y. Sawaragi, H. Nakayama, T. Tanino, Theory of Multiobjective Optimization, Academic Press, Orlando, FL, 1985

T 3.366 Course: Multivariate Statistical Methods [T-WIWI-103124]

Responsible: Prof. Dr. Oliver Grothe
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	1

Events					
WT 24/25	2550554	Multivariate Verfahren	2 SWS	Lecture / 🗣	Grothe
WT 24/25	2550555	Practice Multivariate Statistical Methods	2 SWS	Practice / 🗣	Liu
Exams					
WT 24/25	7900217	Multivariate Statistical Methods			Grothe
ST 2025	7900351	Multivariate Statistical Methods			Grothe

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

Assessment
Witten examination lasting 60 minutes.

The examination is offered during the examination period of the lecture semester. Only repeaters (and not first-time writers) are admitted to the repeat examination in the examination period of the following semester.

Prerequisites
None

Recommendations
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.

Additional Information
The course (lecture and exercise) is offered irregularly. Detailed information can be found on the chair's website.

Workload
135 hours

T 3.367 Course: Nanotribology and -Mechanics [T-MACH-102167]

Responsible: Prof. Dr. Martin Dienwiebel
apl. Prof. Dr. Hendrik Hölscher
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	5

Events					
WT 24/25	2182712	Nanotribology and -Mechanics	2 SWS	Block / 🗣	Dienwiebel
ST 2025	2182712	Nanotribology and -Mechanics	2 SWS	Lecture / Practice (/ 🗣	Dienwiebel

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

Assessment
oral exam, about 25 min

Prerequisites
none

Recommendations
preliminary knowlegde in mathematics and physics

Additional Information
The course is offered in German.

Workload
120 hours

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

V Nanotribology and -Mechanics

2182712, WS 24/25, 2 SWS, Language: English, Open in study portal

Block (B)
On-Site

Content
In the summer semester the lecture is offered in German and in the winter semester in English!

Part 1: Fundamentals of nanotribology

- General tribology / nanotechnology
- Forces and dissipation on the nanometer scale
- Experimental methods (SFA, QCM, FFM)
- Prandtl-Tomlinson model
- Superlubricity
- Carbon-based tribosystems
- Electronic friction
- Nanotribology in liquids
- Atomic abrasion
- nanolubrication

Part 2: Topical papers

The student can

- explain the physical foundations and common models used in the field of nanotribology and nanomechanics
- describe the most important experimental methods in nanotribology
- critically evaluate scientific papers on nanotribological issues with respect to their substantial quality

preliminary knowlegde in mathematics and physics recommended

regular attendance: 22,5 hours
preparation for presentation: 22,5 hours
self-study: 75 hours

presentation (40%) and oral examination (30 min, 60%)
no tools or reference materials

Organizational issues
Email registration to lecturer by 10/10/2024: martin.dienwiebel@kit.edu

Anmeldung per Email bis zum 10.10.2024 an den Dozenten: martin.dienwiebel@kit.edu

Literature
Tafelbilder, Folien, Kopien von Artikeln

V

Nanotribology and -Mechanics

2182712, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
In the summer semester the lecture is offered in German and in the winter semester in English!

Part 1: Fundamentals of nanotribology

- General tribology / nanotechnology
- Forces and dissipation on the nanometer scale
- Experimental methods (SFA, QCM, FFM)
- Prandtl-Tomlinson model
- Superlubricity
- Carbon-based tribosystems
- Electronic friction
- Nanotribology in liquids
- Atomic abrasion
- nanolubrication

Part 2: Topical papers

The student can

- explain the physical foundations and common models used in the field of nanotribology and nanomechanics
- describe the most important experimental methods in nanotribology
- critically evaluate scientific papers on nanotribological issues with respect to their substantial quality

preliminary knowlegde in mathematics and physics recommended

regular attendance: 22,5 hours
preparation for presentation: 22,5 hours
self-study: 75 hours

presentation (40%) and oral examination (30 min, 60%)
no tools or reference materials

Organizational issues
Die Vorlesung wird auf Deutsch (SoSe) und auf Englisch (WiSe) angeboten!

Lecture will be offered for the last time in winter semester 2025/2026 and then replaced by: Energy Efficient and Sustainable Tribological Systems

Kontakt: martin.dienwiebel@kit.edu

Literature
Edward L. Wolf
Nanophysics and Nanotechnology, Wiley-VCH, 2006

C. Mathew Mate
Tribology on the Small Scale: A Bottom Up Approach to Friction, Lubrication, and Wear (Mesoscopic Physics and Nanotechnology) 1st Edition, Oxford University Press

Tafelbilder, Folien, Kopien von Artikeln

T 3.368 Course: Nature-Inspired Optimization Methods [T-WIWI-102679]

Responsible: Prof. Dr. Pradyumn Kumar Shukla
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	2

Events					
ST 2025	2511106	Nature-Inspired Optimization Methods	2 SWS	Lecture /	Shukla
ST 2025	2511107	Übungen zu Nature-Inspired Optimization Methods	1 SWS	Practice /	Shukla
Exams					
WT 24/25	79AIFB_NOM_B5	Nature-Inspired Optimisation Methods			Shukla
ST 2025	79AIFB_NOM_C1	Nature-Inspired Optimization Methods (Registration until 21.07.2025)			Shukla

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

Assessment
Success is assessed in the form of a written (60 min) or oral examination.

The examination for this course is offered both in the semester in which the course takes place and in the following semester. In the following semester (winter term), participation in the exam is **exclusively reserved for students who did not pass the first attempt.** This regulation applies from summer semester 2025.

Prerequisites
None

Workload
135 hours

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

V Nature-Inspired Optimization Methods

2511106, SS 2025, 2 SWS, Language: English, Open in study portal

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

Content
Many optimization problems are too complex to be solved to optimality. A promising alternative is to use stochastic heuristics, based on some fundamental principles observed in nature. Examples include evolutionary algorithms, ant algorithms, or simulated annealing. These methods are widely applicable and have proven very powerful in practice. During the course, such optimization methods based on natural principles are presented, analyzed and compared. Since the algorithms are usually quite computational intensive, possibilities for parallelization are also investigated.

Learning objectives:

Students learn:

- Different nature-inspired methods: local search, simulated annealing, tabu search, evolutionary algorithms, ant colony optimization, particle swarm optimization
- Different aspects and limitation of the methods
- Applications of such methods
- Multi-objective optimization methods
- Constraint handling methods
- Different aspects in parallelization and computing platforms

Literature
* E. L. Aarts and J. K. Lenstra: 'Local Search in Combinatorial Optimization'. Wiley, 1997 * D. Corne and M. Dorigo and F. Glover: 'New Ideas in Optimization'. McGraw-Hill, 1999 * C. Reeves: 'Modern Heuristic Techniques for Combinatorial Optimization'. McGraw-Hill, 1995 * Z. Michalewicz, D. B. Fogel: How to solve it: Modern Heuristics. Springer, 1999 * E. Bonabeau, M. Dorigo, G. Theraulaz: 'Swarm Intelligence'. Oxford University Press, 1999 * A. E. Eiben, J. E. Smith: 'Introduction to Evolutionary Computation'. * M. Dorigo, T. Stützle: 'Ant Colony Optimization'. Bradford Book, 2004 Springer, 2003

T 3.369 Course: Network Security: Architectures and Protocols [T-INFO-101319]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Events					
ST 2025	24601	Network Security: Architectures and Protocols	2 SWS	Lecture / 🗣	Baumgart, Bless, Zitterbart
Exams					
WT 24/25	7500014	Network Security: Architectures and Protocols			Zitterbart, Bless, Baumgart
ST 2025	7500072	Network Security: Architectures and Protocols			Zitterbart, Bless, Baumgart
ST 2025	7500375	Network Security: Architectures and Protocols - for retakers			Zitterbart, Bless, Baumgart

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

Assessment
The assessment is carried out as an oral examination (§ 4 Abs. 2 Nr. 2 SPO) lasting 20 minutes.

Depending on the number of participants, it will be announced six weeks before the examination (Section 6 (3) SPO) whether the assessment will take the form of an oral examination of approx.

- in the form of an oral examination of approx. 30 minutes in accordance with § 4 Para. 2 No. 2 SPO or

- in the form of a written examination in accordance with § 4 Para. 2 No. 1 SPO

takes place.

Prerequisites
None.

Recommendations
The contents of the lecture Introduction to Computer Networks are assumed to be known. Attendance of the lecture Telematics is strongly recommended, as the contents are an important basis for understanding and classifying the material.

T 3.370 Course: Non- and Semiparametrics [T-WIWI-103126]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	1

Assessment
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendations
Knowledge of the contents covered by the course *"Applied Econometrics"* [2520020]

Additional Information
The course takes place every second winter semester: 2018/19 then 2020/21

T 3.371 Course: Nonlinear Optimization I [T-WIWI-102724]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	4

Events					
WT 24/25	2550111	Nonlinear Optimization I	2 SWS	Lecture / 🗣	Stein
WT 24/25	2550112	Exercises Nonlinear Optimization I	1 SWS	Practice / 🗣	Stein, Schwarze, Neussel
Exams					
WT 24/25	7900001_WS2425_HK	Nonlinear Optimization I			Stein
ST 2025	7900202_SS2025_NK	Nonlinear Optimization I			Stein

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

Assessment
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.

Additional Information
Part I and II of the lecture are held consecutively in the *same* semester.

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

V Nonlinear Optimization I

2550111, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture treats the minimization of smooth nonlinear functions without constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality condtions
- Algorithms (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *with* constraints forms the contents of the lecture "Nonlinear Optimization II". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of unconstrained nonlinear optimization,
- is able to choose, design and apply modern techniques of unconstrained nonlinear optimization in practice.

Literature

O. Stein, Grundzüge der Nichtlinearen Optimierung, 2. Aufl., SpringerSpektrum, 2021

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T 3.372 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-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	9 CP	graded	Each winter term	6

Events					
WT 24/25	2550111	Nonlinear Optimization I	2 SWS	Lecture / 🗣	Stein
WT 24/25	2550112	Exercises Nonlinear Optimization I	1 SWS	Practice / 🗣	Stein, Schwarze, Neussel
WT 24/25	2550113	Nonlinear Optimization II	2 SWS	Lecture / 🗣	Stein
Exams					
WT 24/25	7900003_WS2425_HK	Nonlinear Optimization I and II			Stein
ST 2025	7900204_SS2025_NK	Nonlinear Optimization I and II			Stein

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

Assessment
The assessment consits of a written exam in English (120 minutes) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The exam takes place in the semester of the lecture and in the following semester.

Prerequisites
None.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-WIWI-102724 - Nonlinear Optimization I must not have been started.
2. The course T-WIWI-102725 - Nonlinear Optimization II must not have been started.

Additional Information
Part I and II of the lecture are held consecutively in the **same** semester.

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

V Nonlinear Optimization I

2550111, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture treats the minimization of smooth nonlinear functions without constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality condtions
- Algorithms (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *with* constraints forms the contents of the lecture "Nonlinear Optimization II". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of unconstrained nonlinear optimization,
- is able to choose, design and apply modern techniques of unconstrained nonlinear optimization in practice.

Literature
O. Stein, Grundzüge der Nichtlinearen Optimierung, 2. Aufl., SpringerSpektrum, 2021

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

V Nonlinear Optimization II

2550113, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions
- Algorithms (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *without* constraints forms the contents of the lecture "Nonlinear Optimization I". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of constrained nonlinear optimization,
- is able to choose, design and apply modern techniques of constrained nonlinear optimization in practice.

Literature
O. Stein, Grundzüge der Nichtlinearen Optimierung, 2. Aufl., SpringerSpektrum, 2021

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T 3.373 Course: Nonlinear Optimization II [T-WIWI-102725]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	3

Events					
WT 24/25	2550112	Exercises Nonlinear Optimization I	1 SWS	Practice / 🗣	Stein, Schwarze, Neussel
WT 24/25	2550113	Nonlinear Optimization II	2 SWS	Lecture / 🗣	Stein
Exams					
WT 24/25	7900002_WS2425_HK	Nonlinear Optimization II			Stein
ST 2025	7900203_SS2025_NK	Nonlinear Optimization II			Stein

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

Assessment
The assessment consits of a written exam (60 minutes) in English according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The exam takes place in the semester of the lecture and in the following semester.

The exam can also be combined with the examination of *Nonlinear Optimization I* [2550111]. In this case, the duration of the written exam takes 120 minutes.

Prerequisites
None.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-WIWI-103637 - Nonlinear Optimization I and II must not have been started.

Additional Information
Part I and II of the lecture are held consecutively in the same semester.

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

V Nonlinear Optimization II

2550113, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions
- Algorithms (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *without* constraints forms the contents of the lecture "Nonlinear Optimization I". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of constrained nonlinear optimization,
- is able to choose, design and apply modern techniques of constrained nonlinear optimization in practice.

Literature
O. Stein, Grundzüge der Nichtlinearen Optimierung, 2. Aufl., SpringerSpektrum, 2021

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T 3.374 Course: Novel Actuators and Sensors [T-MACH-102152]

Responsible: Prof. Dr. Manfred Kohl
Dr. Martin Sommer

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each winter term	4

Events					
WT 24/25	2141865	Novel actuators and sensors	2 SWS	Lecture / 🗣	Kohl, Sommer
Exams					
WT 24/25	76-T-MACH-102152	Novel Actuators and Sensors			Kohl, Sommer
ST 2025	7600010	Novel Actuators and Sensors			Kohl
ST 2025	76-T-MACH-102152	Novel Actuators and Sensors			Sommer, Kohl

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

Assessment
written exam, 60 minutes

Prerequisites
T-MACH-114036 must not be started

Workload
120 hours

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

V Novel actuators and sensors

2141865, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Literature
- Vorlesungsskript "Neue Aktoren" und Folienskript "Sensoren"
- Donald J. Leo, Engineering Analysis of Smart Material Systems, John Wiley & Sons, Inc., 2007
- "Sensors Update", Edited by H.Baltes, W. Göpel, J. Hesse, VCH, 1996, ISBN: 3-527-29432-5
- "Multivariate Datenanalyse – Methodik und Anwendungen in der Chemie", R. Henrion, G. Henrion, Springer 1994, ISBN 3-540-58188-X

T 3.375 Course: Online Concepts for Karlsruhe City Retailers [T-WIWI-111848]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each summer term	2

Events					
ST 2025	2571184	Online concepts for Karlsruhe city retailers	2 SWS	Others (sons / 🗣	Kupfer
Exams					
ST 2025	7900221	Online Concepts for Karlsruhe City Retailers			Kupfer

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

Assessment
Alternative exam assessment:

- presentations in teams (in each case to the extent of approx. 15 minutes per team with subsequent discussio)
- delivery of a written elaboration per team.

Additional Information
Please note that an application is required to participate in this workshop. The application phase usually takes place at the beginning of the lecture period in the summer semester. More information on the application process is usually available on the Marketing and Sales Research Group website (marketing.iism.kit.edu) shortly before the start of the lecture period in the summer semester.

Workload
90 hours

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

V Online concepts for Karlsruhe city retailers

2571184, SS 2025, 2 SWS, Language: German, Open in study portal

Others (sonst.)
On-Site

Content
Content
As part of a practical project in cooperation with the city marketing department of KME Karlsruhe Marketing und Event GmbH, students will have the opportunity to directly interact with retailers in Karlsruhe. Challenges of the digitalization of brick-and-mortar retailing will be analyzed and solutions will be developed and implemented.

In a theoretical part at the beginning of the event, students will gain an insight into the theoretical foundations of specific online marketing instruments. In cooperation with Karlsruhe City Marketing, students are taught application-oriented skills in online marketing tools, such as content management systems, social media platforms, search engine optimization or Google Ads campaigns.

In the practical part of the course, student teams cooperate with a real retailer in Karlsruhe's city center and learn how to analyze and optimize online presences and digital solutions based on key performance indicators. Possible use cases range from social media communication and website optimization to the introduction of innovative pricing and payment methods. In this way, students are given the tools for developing, maintaining and optimizing individual websites and digital solutions in stationary retailing.

Learning objectives result accordingly as follows:
- Learning of theoretical basics of central, application-oriented tools of online marketing
- Application and practical deep-dive of the acquired knowledge in a real case
- Concise and structured presentation of results

Total time required for 3 credit points: approx. 90.0 hours

Attendance time: 12 hours

Preparation and wrap-up of the course: 58 hours

Exam and exam preparation: 20 hours

T 3.376 Course: Operation Methods for Earthmoving [T-BGU-101801]

Responsible: Dr.-Ing. Heinrich Schlick
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	1,5 CP	graded	Each term	1 terms	1

Events					
WT 24/25	6241905	Earthwork	1 SWS	Lecture / 🗣	Haghsheno, Waleczko
Exams					
WT 24/25	8240101801	Operation Methods for Earthmoving			Schneider

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

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
45 hours

T 3.377 Course: Operation Methods for Foundation and Marine Construction [T-BGU-101832]

Responsible: Dr.-Ing. Harald Schneider
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	1,5 CP	graded	Each term	1 terms	1

Events					
WT 24/25	6241904	Underground Construction	1 SWS	Lecture / 🗣	Haghsheno, Schneider
Exams					
WT 24/25	8240101832	Operation Methods for Foundation and Marine Construction			Schneider

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

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
45 hours

T 3.378 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-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each term	3

Events					
WT 24/25	2550495	Operations Research in Health Care Management	2 SWS	Lecture /	Graß
WT 24/25	2550496	Übungen zu OR im Health Care Management	1 SWS	Practice	Graß
ST 2025	2550495	Operations Research in Health Care Management	2 SWS	Lecture /	Graß
ST 2025	2550496	Übungen zu OR im Health Care Management	1 SWS	Practice /	Graß
Exams					
WT 24/25	7900010	Operations Research in Health Care Management			Graß
WT 24/25	7900032	Operations Research in Health Care Management			Graß
ST 2025	7900229	Operations Research in Health Care Management			Graß

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

Assessment
Success is assessed in English in the form of a 60-minute written examination (in accordance with §4(2), 1 SPO).

The examination is offered every semester.

Prerequisites
None

Recommendations
Basic knowledge as co nveyed in the module "Introduction to Operations Research" is assumed.

Additional Information
Lectures and examinations are held in English.

Workload
135 hours

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

V Operations Research in Health Care Management

2550495, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Literature
Elective literature:

- Fleßa: Grundzüge der Krankenhausbetriebslehre, Oldenbourg, 2007
- Fleßa: Grundzüge der Krankenhaussteuerung, Oldenbourg, 2008
- Hall: Patient flow: reducing delay in healthcare delivery, Springer, 2006

V Operations Research in Health Care Management

2550495, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

Literature
Weiterführende Literatur:

- Fleßa: Grundzüge der Krankenhausbetriebslehre, Oldenbourg, 2007
- Fleßa: Grundzüge der Krankenhaussteuerung, Oldenbourg, 2008
- Hall: Patient flow: reducing delay in healthcare delivery, Springer, 2006

T 3.379 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-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	2

Events					
ST 2025	2550480	Operations Research in Supply Chain Management	2 SWS	Lecture / 🗣	Nickel
ST 2025	2550481	Übungen zu OR in Supply Chain Management	1 SWS	Practice / 🗣	Hoffmann
Exams					
ST 2025	7900272	Operations Research in Supply Chain Management			Nickel

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

Assessment
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

Recommendations
Basic knowledge as conveyed in the module Introduction to Operations Research and in the lectures Facility Location and Strategic SCM,Tactical and operational SCMis assumed.

Additional Information
The course is offered irregularly. Planned lectures for the next three years can be found in the internet at http://dol.ior.kit.edu/english/Courses.php.

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

V Operations Research in Supply Chain Management

2550480, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

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 multiple areas of Supply Chain Management: After a short introduction, inventory models, scheduling, assembly line balancing as well as cutting and packing will be discussed. 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 3.380 Course: Operative CRM [T-WIWI-102597]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Assessment
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

Recommendations
The attendance of courses Customer Relationship Management and Analytical CRM is advised.

T 3.381 Course: Optical Transmitters and Receivers [T-ETIT-100639]

Responsible: Prof.Dr.Dr.h.c. Wolfgang Freude
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	6 CP	graded	Each winter term	2

Events					
WT 24/25	2309460	Optical Transmitters and Receivers	2 SWS	Lecture / 🗣	Freude
WT 24/25	2309461	Tutorial for 2309460 Optical Transmitters and Receivers	2 SWS	Practice / 🗣	Freude, N.N.
Exams					
WT 24/25	7309460	Optical Transmitters and Receivers			Freude
ST 2025	7309460	Optical Transmitters and Receivers			Freude

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

Prerequisites
none

T 3.382 Course: Optical Waveguides and Fibers [T-ETIT-101945]

Responsible: Prof. Dr.-Ing. Christian Koos
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2309464	Optical Waveguides and Fibers	2 SWS	Lecture / 🗣	Koos, N.N., Bao
WT 24/25	2309465	Tutorial for 2309464 Optical Waveguides and Fibers	1 SWS	Practice / 🗣	Koos, N.N.
Exams					
WT 24/25	7300036	Optical Waveguides and Fibers (Repetition Exam)			Koos
WT 24/25	7309464	Optical Waveguides and Fibers			Koos
ST 2025	7309464	Optical Waveguides and Fibers			Koos

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

Prerequisites
none

T 3.383 Course: Optimization under Uncertainty [T-WIWI-106545]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	3

Events					
WT 24/25	2550464	Optimization Under Uncertainty	2 SWS	Lecture /	Rebennack
WT 24/25	2550465	Übungen zu Optimierungsansätze unter Unsicherheit	1 SWS	Practice /	Rebennack
WT 24/25	2550466		2 SWS	Others (sons	Rebennack
Exams					
WT 24/25	7900240	Optimization under Uncertainty			Rebennack
ST 2025	7900309	Optimization under Uncertainty			Rebennack

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

Assessment
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.

Workload
135 hours

T 3.384 Course: Optoelectronic Components [T-ETIT-101907]

Responsible: Prof. Dr.-Ing. Sebastian Randel
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2309486	Optoelectronic Components	2 SWS	Lecture /	Randel
ST 2025	2309487	Optoelectronic Components (Tutorial)	1 SWS	Practice /	Randel
Exams					
WT 24/25	7309486	Optoelectronic Components			Randel
ST 2025	7309486	Optoelectronic Components			Randel

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

Prerequisites
none

T 3.385 Course: Panel Data [T-WIWI-103127]

Responsible: apl. Prof. Dr. Wolf-Dieter Heller
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

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

Events					
ST 2025	2520320	Panel Data	2 SWS	Lecture	Heller
ST 2025	2520321	Übungen zu Paneldaten	2 SWS	Practice	Heller
Exams					
ST 2025	7900115	Panel Data			Heller

Assessment
The performance assessment is an alternative exam assessment in the form of a one-hour examination comprising a written and an oral part. The examination takes place as an individual examination or in groups of two.

Prerequisites
None

Workload
135 hours

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

V Panel Data

2520320, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)

Content
Content:

Fixed-Effects-Models, Random-Effects-Models, Time-Demeaning

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Exam preparation: 40 hours

Literature
Wooldridge, J. M. (2002). *Econometric analysis of cross section and panel data*. Cambridge and London: MIT Press.

Wooldridge, J. M. (2009). *Introductory Econometrics: A Modern Approach* (5th ed.). Mason, Ohio: South-Western Cengage Learning.

T 3.386 Course: Parallel Computer Systems and Parallel Programming [T-INFO-101345]

Responsible: Prof. Dr. Achim Streit
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	2

Events					
ST 2025	24617	Parallel computer systems and parallel programming	2 SWS	Lecture	Streit, Barthel, Caspart
Exams					
WT 24/25	7500241	Parallel computer systems and parallel programming			Streit
ST 2025	7500365	Parallel Computer Systems and Parallel Programming			Streit
ST 2025	7500374	Parallel Computer Systems and Parallel Programming			Streit

T 3.387 Course: Parametric Optimization [T-WIWI-102855]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	1

Assessment
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

Recommendations
It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

Additional Information
The lecture is offered irregularly. The curriculum of the next three years is available online (www.ior.kit.edu).

T 3.388 Course: Patent Law [T-INFO-101310]

Responsible: Patric Werner
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each summer term	3

Events					
ST 2025	24656	Patent Law	2 SWS	Lecture / 🗣	Werner
Exams					
WT 24/25	7500006	Patent Law			Sattler, Matz
ST 2025	7500109	Patent Law			Sattler

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

Assessment
The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 60 minutes.

Prerequisites
None.

Recommendations
None.

T 3.389 Course: Photovoltaic System Design [T-ETIT-100724]

Responsible: Dipl.-Ing. Robin Grab
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each summer term	1

Events					
ST 2025	2307380	Photovoltaische Systemtechnik	2 SWS	Lecture / 🗣	Grab
Exams					
ST 2025	7307380	Photovoltaics			Leibfried, Grab

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

Prerequisites
none

T 3.390 Course: Physical Basics of Laser Technology [T-MACH-102102]

Responsible: Dr.-Ing. Johannes Schneider
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	5 CP	graded	Each winter term	5

Events					
WT 24/25	2181612	Physical basics of laser technology	3 SWS	Lecture / Practice (/ 🗣	Schneider
Exams					
WT 24/25	76-T-MACH-102102	Physical Basics of Laser Technology			Schneider
ST 2025	76-T-MACH-102102	Physical Basics of Laser Technology			Schneider

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

Assessment
oral examination (ca. 25-30 min)

no tools or reference materials

Prerequisites
It is not possible, to combine this brick with brick Laser Material Processing [T-MACH-112763], brick Laser Application in Automotive Engineering [T-MACH-105164] and brick Physical Basics of Laser Technology [T-MACH-109084].

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-MACH-112763 - Laser Material Processing must not have been started.
2. The course T-MACH-105164 - Laser in Automotive Engineering must not have been started.

Recommendations
Basic knowledge of physics, chemistry and material science

Additional Information
The course is offered in German.

Workload
150 hours

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

V Physical basics of laser technology

2181612, WS 24/25, 3 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
Based on the description of the physical basics about the formation and the properties of laser light the lecture goes through the different types of laser beam sources used in industry these days. The lecture focuses on the usage of lasers especially in materials engineering. Other areas like measurement technology or medical applications are also mentioned.

- physical basics of laser technology
- laser beam sources (solid state, diode, gas, liquid and other lasers)
- beam properties, guiding and shaping
- lasers in materials processing
- lasers in measurement technology
- lasers for medical applications
- savety aspects

The lecture is complemented by a tutorial.

The student

- can explain the principles of light generation, the conditions for light amplification as well as the basic structure and function of different laser sources.
- can describe the influence of laser, material and process parameters for the most important methods of laser-based materials processing and choose laser sources suitable for specific applications.
- can illustrate the possible applications of laser sources in measurement and medicine technology
- can explain the requirements for safe handling of laser radiation and for the design of safe laser systems.

Basic knowledge of physics, chemistry and material science is assumed.

regular attendance: 33,5 hours
self-study: 116,5 hours

The assessment consists of an oral exam (ca. 30 min) taking place at the agreed date (according to Section 4(2), 2 of the examination regulation). The re-examination is offered upon agreement.

It is allowed to select only one of the lectures "Laser in automotive engineering" (2182642) or "Physical basics of laser technology" (2181612) during the Bachelor and Master studies.

Organizational issues
Termine für die Übung werden in der Vorlesung bekannt gegeben!

Literature
M. W. Sigrist: Laser: Theorie, Typen und Anwendungen, 2018, Springer Spektrum

T. Graf: Laser - Grundlagen der Laserstrahlerzeugung 2015, Springer Vieweg

R. Poprawe: Lasertechnik für die Fertigung, 2005, Springer

H. Hügel, T. Graf: Materialbearbeitung mit Laser, 2023, Springer Vieweg

J. Eichler, H.-J. Eichler: Lasers - Basics, Advances and Applications, 2018, Springer

W. T. Silfvast: Laser Fundamentals, 2008, Cambridge University Press

W. M. Steen: Laser Material Processing, 2010, Springer

R. Poprawe, et al.: Tailored Light 1 - High Power Lasers for Production, 2018, Springer

R. Poprawe, et al.: Tailored Light 2 - Laser Applications, 2024, Springer

T 3.391 Course: Physics for Engineers [T-MACH-100530]

Responsible: Prof. Dr. Martin Dienwiebel
Prof. Dr. Peter Gumbsch
apl. Prof. Dr. Alexander Nesterov-Müller
Dr. Daniel Weygand

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each summer term	1

Events					
ST 2025	2142890	Physics for Engineers	4 SWS	Lecture / Practice (/ 🗣	Weygand, Dienwiebel, Nesterov-Müller, Gumbsch
Exams					
ST 2025	76-T-MACH-100530	Physics for Engineers			Gumbsch, Weygand, Nesterov-Müller, Dienwiebel

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

Assessment
written exam 90 min

Prerequisites
none

Additional Information
The course is offered in German.

Workload
150 hours

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

V **Physics for Engineers** **Lecture / Practice (VÜ)**
2142890, SS 2025, 4 SWS, Language: German, Open in study portal **On-Site**

Content
1) Foundations of solid state physics

- Wave particle dualism
- Tunnelling
- Schrödinger equation
- H-atom

2) Electrical conductivity of solids

- solid state: periodic potentials
- Pauli Principle
- band structure
- metals, semiconductors and isolators
- p-n junction / diode

3) Optics

- quantum mechanical principles of the laser
- linear optics
- non-linear optics

Exercises are used for complementing and deepening the contents of the lecture as well as for answering more extensive questions raised by the students and for testing progress in learning of the topics.

The student

- has the basic understanding of the physical foundations to explain the relationship between the quantum mechanical principles and the optical as well as electrical properties of materials
- can describe the fundamental experiments, which allow the illustration of these principles

regular attendance: 22,5 hours (lecture) and 22,5 hours (excerises)
self-study: 105 hours

The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

Organizational issues
Kontakt: daniel.weygand@kit.edu

Literature

- Tipler und Mosca: Physik für Wissenschaftler und Ingenieure, Elsevier, 2004
- Haken und Wolf: Atom- und Quantenphysik. Einführung in die experimentellen und theoretischen Grundlagen, 7. Aufl., Springer, 2000
- Harris, Moderne Physik, Pearson Verlag, 2013

T 3.392 Course: Pioneering Leadership in German SMEs [T-WIWI-114184]

Responsible: Eva Schulz-Kamm
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each summer term	1

Events					
ST 2025	2500033	Pioneering Leadership in the German Mittelstand	2 SWS	Seminar / 🗣	Weissenberger-Eibl

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

Assessment
Non exam assessment consisting of a presentation of the results and a seminar paper (written in the group).

The grade is composed of 70% of the grade for the written work and 30% of the grade for the presentation.

Prerequisites
None

Recommendations
Prior attendance of the course Innovation Management is recommended.

Workload
90 hours

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

V Pioneering Leadership in the German Mittelstand

2500033, SS 2025, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content
Participants
- learn about the particular specifics of management and the cultural constitution of medium-sized and, in particular, family-run companies in Germany.
- understand the core elements of owner strategy and corporate strategy and why both strategies are linked in family businesses.
- gain an overview of the complex challenges facing German SMEs and the entrepreneurial barriers and success factors that significantly determine competitiveness and innovative ability.
- have understood what role leadership skills play in this, what key skills there are, how they are measured and how they are used in business practice.
- have internalized which competencies constitute so-called “pioneering leadership” and can assess these in themselves as well as medium-sized companies - as attractive future employers - with regard to innovative ability and competitiveness.
- consolidate what they have learned using current examples and case studies from business practice in German SMEs as well as management consulting and HR consulting practice.

T 3.393 Course: Platform & Market Engineering: Commerce, Media, and Digital Democracy [T-WIWI-112823]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	2

Events					
ST 2025	2540460	Platform & Market Engineering: Commerce, Media, and Digital Democracy	2 SWS	Lecture / 🗣	Weinhardt, Fegert
ST 2025	2540461	Übungen zu Platform & Market Engineering: Commerce, Media, and Digital Democracy	1 SWS	Practice / 🗣	Fegert, Stano
Exams					
WT 24/25	7910804	Platform & Market Engineering: Commerce, Media, and Digital Democracy			Weinhardt

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

Assessment
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 Platform & Market Engineering: Commerce, Media, and Digital Democracy

2540460, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
This lecture introduces an *innovative learning format* centered around *dynamic, AI-assisted self-study*, complemented by *in-person discussion sessions* to deepen content understanding. Instead of traditional lecture-based teaching (Frontalunterricht), we are piloting a type of flipped-classroom approach. The course is designed to be *co-developed by students and lecturers*—for example, through the creation of podcasts using AI tools like NotebookLM in small groups. This not only reinforces your grasp of the material but also builds your AI literacy.

The course will be graded with 80 points total. 60 of them can be earned in the exam at the end of the semester. The remaining 20 points can be earned in the exercise, where a podcast of a part of the lecture content has to be generated. For outstanding podcast submissions, you can receive up to *10 additional bonus* points.

Digital platforms and markets play an increasingly vital role in modern economies and societies. Understanding how to engineer these systems for efficiency, fairness, and societal benefit is crucial for shaping the digital future. By combining economic theory, engineering principles, and hands-on applications, this course prepares you to address real-world challenges in eCommerce, digital media, and digital democracy.
This lecture provides an in-depth exploration of the theoretical foundations, practical applications, and engineering principles essential for understanding and designing modern markets and digital platforms.

We aim to:

- Equip students with the ability to analyze, design, and evaluate digital markets and platforms.
- Provide an understanding of market mechanisms, economic principles, and the role of digital infrastructure in shaping economic and social interactions.
- Explore the influence of digital platforms on media, democracy, and citizen participation.
- Explore ethical implications of digital platforms and online market mechanisms.
- Apply generative AI tools to analyze, structure, and communicate topics from the lecture.
- Develop skills in critical evaluation of AI-generated content.

Course Structure:

1. Foundations of Platform & Market Engineering
    1. Market Engineering and Institutional Economics
    2. The "House of Market Engineering"
    3. Key concepts: efficiency, fairness, incentive compatibility, market convergence
2. Applications and Principles of Markets
    1. Market Engineering and Institutional Economics
    2. Economic theories in digital markets and platforms
3. Market Engineering Microstructure and Infrastructure
    1. Game Theory
    2. Mechanism Design
    3. Trust and Enforcement
    4. Auctions (single-item, combinatorial)
    5. IT & Business Infrastructure
    6. Evaluating Market Engineering: Experimental Economics
4. Digital Platforms and the Media
5. Digital Democracy:
    1. Online Polarization and Disinformation
    2. Digital Participation Engineering
    3. Digital Citizen Science Engineering
6. Ethical Implications

Organizational issues
ehemals: "**Market Engineering: Information in Institutions"**

Literature

- Roth, A., The Economist as Engineer: Game Theory, Experimental Economics and Computation as Tools for Design Economics. Econometrica 70(4): 1341-1378, 2002.
- Weinhardt, C. ,Holtmann, C., Neumann, D., Market Engineering. Wirtschaftsinformatik, 2003.
- Wolfstetter, E., Topics in Microeconomics - Industrial Organization, Auctions, and Incentives. Cambridge, Cambridge University Press, 1999.
- Smith, V. "Theory, Experiments and Economics", The Journal of Economic Perspectives,Vol. 3, No. 1, 151-69 1989

T 3.394 Course: Platform Economy [T-WIWI-107506]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each winter term	3

Events					
WT 24/25	2540468	Platform Economy	2 SWS	Lecture / 🗣	Weinhardt, Fegert
WT 24/25	2540469	Übung zu Platform Economy	1 SWS	Practice / 🗣	Stano
Exams					
WT 24/25	7900213	Platform Economy			Weinhardt
ST 2025	7900266	Platform Economy			Weinhardt

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

Assessment
Alternative exam assessment. The assessment is carried out in the form of a one-hour written examination and by carrying out a case study. Details on the assessment will be announced during the lecture.

Prerequisites
see below

Recommendations
None

Workload
135 hours

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

V Platform Economy

2540468, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture kick-off this Semester will take place on the 29th of October 2024.

Lecture and Exercise

The "Platform Economy" lecture provides a broad range of knowledge related to online platforms and their business models, examining their significance for users, operators, and society as a whole. The course is structured into 8 topical blocks, each exploring a different aspect of the platform economy in depth. Each block is led by a different lecturer who is an expert in the respective topic. The key topics covered in the lecture include:

Network Effects and Two-Sided Markets

- Business Models and Auctions
- Energy Market Engineering
- Digital Involvement: Crowd X & Citizen Science
- Digital Democracy and Social Media
- Analyzing User Behavior
- Trust and Reputation in Digital Platforms
- Ethical Considerations in the Platform Economy

To reinforce the lecture material, each block is accompanied by interactive exercises that encourage a deeper understanding of the topics. In these exercises, students will engage in discussions and explore practical examples that illustrate the theoretical concepts introduced during the lectures. The lecture and exercise also offer a chance to get an idea of the lectures offered during the master's program at our chair.

Case Study

In addition to the lectures, you will work on a case study in small groups. Your task will be to develop a business model for an innovative and novel online platform, which will be presented to you by one of our experts, either from the academic team or the industry. This case study offers a chance to gain deeper insights into current trends in the platform economy and to apply the knowledge acquired throughout the course in a practical, hands-on way.

Literature

- Bundesministerium für Wirtschaft und Energie (2017). „Kompetenzen für eine digitale Sourveränität“(abrufbar unter https://www.bmwi.de/Redaktion/DE/Publikationen/Studien/kompetenzen-fuer-eine-digitale-souveraenitaet.html)
- Bundesministerium für Wirtschaft und Energie (2017). „Weißbuch Digitale Plattformen.“ (abrufbar unter https://www.bmwi.de/Redaktion/DE/Publikationen/Digitale-Welt/weissbuch-digitale-plattformen.pdf?__blob=publicationFile&v=8)
- Easley, D., and Kleinberg, J. 2010. “Network Effects,” in Networks, Crowds, and Markets: Reasoning about a Highly Connected World, Cambridge University Press, pp. 509–542.
- Eisenmann, T., Parker, G., and Van Alstyne, M. W. 2006. “Strategies for two-sided markets,” Harvard Business Review 84(10), pp. 1–11.
- Gassmann, O., Frankenberger, K., and Csik, M. 2013. Geschäftsmodelle entwickeln: 55 innovative Konzepte mit dem St. Galler Business Model Navigator, Hanser.
- Wattenhofer, R. 2016. “The science of the blockchain.” CreateSpace Independent Publishing Platform.
- Roth, A. 2002. “The Economist as Engineer: Game Theory, Experimental Economics and Computation as Tools for Design Economics,” Econometrica 70(4): 1341-1378, 2002.
- Weinhardt, C. ,Holtmann, C., Neumann, D., Market Engineering. Wirtschaftsinformatik, 2003.
- Wolfstetter, E., 1999. “Topics in Microeconomics - Industrial Organization, Auctions, and Incentives,” Cambridge, Cambridge University Press.
- Teubner, T., and Hawlitschek, F. (in press). “The economics of P2P online sharing,” in The Sharing Economy: Possibilities, Challenges, and the way forward, Praeger Publishing.

T 3.395 Course: PLM for Product Development in Mechatronics [T-MACH-102181]

Responsible: Prof. Dr.-Ing. Martin Eigner
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	2

Assessment
Oral examination 20 min.

Prerequisites
none

Workload
120 hours

T 3.396 Course: PLM-CAD Workshop [T-MACH-102153]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	4 CP	graded	Each term	4

Events					
WT 24/25	2121357	PLM-CAD Workshop	4 SWS	Project (P / 🗣	Mitarbeiter, Rönnau
ST 2025	2121357	PLM-CAD Workshop	4 SWS	Project (P / 🗣	Rönnau, Meyer
Exams					
WT 24/25	76-T-MACH-102153	PLM-CAD Workshop			Rönnau, Meyer
ST 2025	76-T-MACH-102153	PLM-CAD Workshop			Rönnau

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

Assessment
Learning control is an examination of another type. The overall impression is evaluated. The following aspects are included in the grading:

- Completion of the project task and documentation
- 4 interim presentations
- Final presentation including live demonstration

The grading scale will be announced in the course.

Prerequisites
None

Additional Information
Number of participants is limited, compulsory attendance

Workload
120 hours

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

V PLM-CAD Workshop

2121357, WS 24/25, 4 SWS, Language: German, Open in study portal

Project (PRO)
On-Site

Content
The aim of the workshop is to demonstrate the benefits of collaborative product development using PLM methods and to emphasize their added value compared to classical CAD development.

Students learn how to develop and produce a prototype with the help of modern PLM and CAx systems.

Literature
Workshop-Unterlagen / workshop materials

V PLM-CAD Workshop

2121357, SS 2025, 4 SWS, Language: German, Open in study portal

Project (PRO)
On-Site

Content
The aim of the workshop is to demonstrate the benefits of collaborative product development using PLM methods and to emphasize their added value compared to classical CAD development.

Students learn how to develop and produce a prototype with the help of modern PLM and CAx systems.

Literature
Workshop-Unterlagen / workshop materials

T 3.397 Course: Polymer Engineering I [T-MACH-102137]

Responsible: Dr.-Ing. Wilfried Liebig
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	2

Events					
WT 24/25	2173590	Polymer Engineering I	2 SWS	Lecture / 🗣	Liebig
Exams					
WT 24/25	76-T-MACH-102137	Polymer Engineering I			Liebig
ST 2025	76-T-MACH-102137	Polymer Engineering I			Liebig

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

Assessment
Oral exam, about 25 minutes

Prerequisites
T-MACH-114007 must not have been started

Additional Information
The course is offered in German.

Workload
120 hours

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

V Polymer Engineering I

2173590, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
1. Economical aspects of polymers
2. Introductiom of mechanical,
chemical end electrical properties
3. Processing of polymers
(introduction)
4. Material science of polymers
5. Synthesis

learning objectives:

The field of Polymer Engineering includes synthesis, material science, processing, construction, design, tool engineering, production technology, surface engineering and recycling. The aim is, to equip the students with knowledge and technical skills, and to use the material "polymer" meeting its requirements in an economical and ecological way.

The students

- are able to describe and classify polymers
  based on the fundamental synthesis processing techniques
- can find practical applications for state-of-the-art polymers and manufacturing technologies
- are able to apply the processing techniques, the application of polymers and polymer composites regarding to the basic principles of material science
- can describe the special mechanical, chemical and elctrical prooperties of polymers and correlate these properties to the chemical bindings.
- can define application areas and the limitation in the use of polymers

requirements:
none

workload:

regular attendance: 21 hours
self-study: 99 hours

Literature
Literaturhinweise, Unterlagen und Teilmanuskript werden in der Vorlesung ausgegeben.

T 3.398 Course: Polymer Engineering II [T-MACH-102138]

Responsible: Dr.-Ing. Wilfried Liebig
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	2

Events					
ST 2025	2174596	Polymer Engineering II	2 SWS	Lecture / 🗣	Liebig
Exams					
WT 24/25	76-T-MACH-102138	Polymerengineering II			Liebig
ST 2025	76-T-MACH-102138	Polymerengineering II			Liebig

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

Assessment
Oral exam, about 25 minutes

Prerequisites
T-MACH-114007 must not be started.

Recommendations
Knowledge in Polymerengineering I

Additional Information
The course is offered in German.

Workload
120 hours

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

V Polymer Engineering II — **Lecture (V) On-Site**
2174596, SS 2025, 2 SWS, Language: German, Open in study portal

Content
1. Processing of polymers
2. Properties of polymer components
Based on practical examples and components
2.1 Selection of material
2.2 Component design
2.3 Tool engineering
2.4 Production technology
2.5 Surface engineering
2.6 Sustainability, recycling

learning objectives:

The field of Polymer Engineering includes synthesis, material science, processing, construction, design, tool engineering, production technology, surface engineering and recycling. The aim is, that the students gather knowledge and technical skills to use the material "polymer" meeting its requirements in an economical and ecological way.

The students

- can describe and classify different processing techniques
  and can exemplify mould design principles based on technical parts.
- know about practical applications and processing of polymer parts
- are able to design polymer parts according to given restrictions
- can choose appropriate polymers based on the technical requirements
- can decide how to use polymers regarding the production, economical and ecological requirements

requirements:
Polymerengineering I
workload:

The workload for the lecture Polymerengineering II is 120 h per semester and consists of the presence during the lecture (21 h) as well as preparation and rework time at home (99 h).

Literature
Literaturhinweise, Unterlagen und Teilmanuskript werden in der Vorlesung ausgegeben.

Recommended literature and selected official lecture notes are provided in the lecture.

T 3.399 Course: Polymers in MEMS A: Chemistry, Synthesis and Applications [T-MACH-102192]

Responsible: Dr.-Ing. Matthias Worgull
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2141853	Polymers in MEMS A: Chemistry, Synthesis and Applications	2 SWS	/	Worgull
Exams					
WT 24/25	76-T-MACH-102192	Polymers in MEMS A: Chemistry, Synthesis and Applications			Rapp, Worgull
ST 2025	76-T-MACH-102192	Polymers in MEMS A: Chemistry, Synthesis and Applications			Rapp, Worgull

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

Assessment
Oral examination

Prerequisites
none

Workload
120 hours

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

V Polymers in MEMS A: Chemistry, Synthesis and Applications

2141853, WS 24/25, 2 SWS, Language: German, Open in study portal **Blended (On-Site/Online)**

Organizational issues
Findet als Blockveranstaltung am Semesterende statt.

T 3.400 Course: Polymers in MEMS B: Physics, Microstructuring and Applications [T-MACH-102191]

Responsible: Dr.-Ing. Matthias Worgull
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2141854	Polymers in MEMS B: Physics, Microstructuring and Applications	2 SWS	Lecture /	Worgull
Exams					
WT 24/25	76-T-MACH-102191	Polymers in MEMS B: Physics, Microstructuring and Applications			Worgull
ST 2025	76-T-MACH-102191	Polymers in MEMS B: Physics, Microstructuring and Applications			Worgull

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

Assessment
Oral examination

Prerequisites
none

Workload
120 hours

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

V Polymers in MEMS B: Physics, Microstructuring and Applications — **Lecture (V) Blended (On-Site/Online)**
2141854, WS 24/25, 2 SWS, Language: German, Open in study portal

T 3.401 Course: Polymers in MEMS C: Biopolymers and Bioplastics [T-MACH-102200]

Responsible: Dr.-Ing. Matthias Worgull
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2142855	Polymers in MEMS C - Biopolymers and Bioplastics	2 SWS	/	Worgull
Exams					
WT 24/25	76-T-MACH-102200	Polymers in MEMS C: Biopolymers and Bioplastics			Worgull, Rapp
ST 2025	76-T-MACH-102200	Polymers in MEMS C: Biopolymers and Bioplastics			Worgull, Rapp

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

Assessment
Oral examination

Prerequisites
none

Workload
120 hours

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

V Polymers in MEMS C - Biopolymers and Bioplastics

2142855, SS 2025, 2 SWS, Language: German, Open in study portal **Blended (On-Site/Online)**

Content
Polymers are ubiquitous in everyday life: from packaging materials all the way to specialty products in medicine and medical engineering. Today it is difficult to find a product which does not (at least in parts) consist of polymeric materials. The question of how these materials can be improved with respect to their disposal and consumption of (natural) resources during manufacturing is often raised. Today polymers must be fully recycled in Germany and many other countries due to the fact that they do not (or only very slowly) decompose in nature. Furthermore significant reductions of crude oil consumption during synthesis are of increasing importance in order to improve the sustainability of this class of materials. With respect to disposal polymers which do not have to be disposed by combustion but rather allow natural decomposition (composting) are of increasing interest. Polymers from renewable sources are also of interest for modern microelectromechanical systems (MEMS) especially if the systems designed are intended as single-use products.

This lecture will introduce the most important classes of these so-called biopolymers and bioplastics. It will also discuss and highlight polymers which are created from naturally created analogues (e.g. via fermentation) to petrochemical polymer precursors and describe their technical processing. Numerous examples from MEMS as well as everyday life will be given.

Some of the topics covered are:

- What are biopolyurethanes and how can you produce them from castor oil?
- What are "natural glues" and how are they different from chemical glues?
- How do you make tires from natural rubbers?
- What are the two most important polymers for life on earth?
- How can you make polymers from potatoes?
- Can wood be formed by injection molding?
- How do you make buttons from milk?
- Can you play music on biopolymers?
- Where and how do you use polymers for tissue engineering?
- How can you built LEGO with DNA?

The lecture will be given in German language unless non-German speaking students attend. In this case, the lecture will be given in English (with some German translations of technical vocabulary). The lecture slides are in English language and will be handed out for taking notes. Additional literature is not required.

For further details, please contact the lecturer, PD Dr.-Ing. Matthias Worgull (matthias.worgull@kit.edu). Preregistration is not necessary.

Organizational issues
Für weitere Rückfragen, wenden Sie sich bitte an PD Dr.-Ing- Matthias Worgull (matthias.worgull@kit.edu). Eine Voranmeldung ist nicht notwendig.

Literature
Zusätzliche vorlesungsbegleitende Literatur ist nicht notwendig.

T 3.402 Course: Portfolio and Asset Liability Management [T-WIWI-103128]

Responsible: Dr. Mher Safarian
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2520357	Portfolio and Asset Liability Management	2 SWS	Lecture	Safarian
ST 2025	2520358	Übungen zu Portfolio and Asset Liability Management	2 SWS	Practice	Safarian
Exams					
ST 2025	7900366	Portfolio and Asset Liability Management			Safarian

Assessment
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 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)

Content
Learning objectives:

Knowledge of various portfolio management techniques in the financial industry.

Content:

Portfolio theory: principles of investment, Markowitz- portfolio analysis, Modigliani-Miller theorems and absence of arbitrage, efficient markets, capital asset pricing model (CAPM), multi factorial CAPM, arbitragepricing theory (APT), arbitrage and hedging, multi factorial models, equity-portfolio management, passive strategies, active investment

Asset liability: statistical portfolio analysis in stock allocation, measures of success, dynamic multi seasonal models, models in building scenarios, stochastic programming in bond and liability management, optimal investment strategies, integrated asset liability management

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Exam preparation: 40 hours

Organizational issues
Blockveranstaltung, Termine werden über Ilias bekanntgegeben

Literature
To be announced in the lecture

T 3.403 Course: Power Generation [T-ETIT-101924]

Responsible: Dr.-Ing. Bernd Hoferer
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	3 CP	graded	Each winter term	2

Events					
WT 24/25	2307356	Power Generation	2 SWS	Lecture / 🗣	Hoferer
Exams					
WT 24/25	7307356	Power Generation			Hoferer
ST 2025	7307356	Power Generation			Hoferer

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

Prerequisites
none

T 3.404 Course: Power Network [T-ETIT-100830]

Responsible: Prof. Dr.-Ing. Thomas Leibfried
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each winter term	2

Events					
WT 24/25	2307371	Power Network	2 SWS	Lecture / 🗣	Leibfried
WT 24/25	2307373	Tutorial for 2307371 Power Network	1 SWS	Practice / 🗣	Leibfried, Geis-Schroer
Exams					
WT 24/25	7307371	Power Network			Leibfried
ST 2025	7307371	Power Network			Leibfried

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

T 3.405 Course: Practical Course Polymers in MEMS [T-MACH-105556]

Responsible: Dr.-Ing. Matthias Worgull
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework	2 CP	pass/fail	Each summer term	1

Assessment
The practical course will close with an oral examination.There will be only passed and failed results, no grades.

Prerequisites
none

T 3.406 Course: Practical Course Technical Ceramics [T-MACH-105178]

Responsible: apl. Prof. Dr. Günter Schell
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework	4 CP	pass/fail	Each winter term	2

Events					
WT 24/25	2125751	Practical Course Technical Ceramics	2 SWS	Practical course / 🗣	Schell
Exams					
WT 24/25	76-T-MACH-105178	Practical Course Technical Ceramics			Schell

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

Assessment
Colloquium and laboratory report for the respective experiments.

Prerequisites
none

Workload
30 hours

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

V Practical Course Technical Ceramics

2125751, WS 24/25, 2 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

Organizational issues
Elektronisch über das ILIAS-Portal

Literature
Salmang, H.: Keramik, 7. Aufl., Springer Berlin Heidelberg, 2007. - Online-Ressource

Richerson, D. R.: Modern Ceramic Engineering, CRC Taylor & Francis, 2006

T 3.407 Course: Practical Seminar Digital Service Systems [T-WIWI-106563]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Irregular	1

Exams			
WT 24/25	7900341	Practical Seminar: Human-Centered Systems	Mädche
ST 2025	7900262	Practical Seminar: Human-Centered Systems	Mädche
ST 2025	7900319	Service Design Thinking	Satzger
ST 2025	7900320	Practical Seminar Service Innovation	Satzger

Assessment
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

Recommendations
None

Additional Information
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.

T 3.408 Course: Practical Seminar Interaction [T-WIWI-109935]

Responsible: Prof. Dr. Alexander Mädche
Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each term	2

Assessment
The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class. Please take into account that, beside the written documentation, also a practical component (e.g. implementation of a prototype) is part of the course. Please examine the course description for the particular tasks. The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class). In the winter terms, the course is only offered as a seminar.

Prerequisites
None.

T 3.409 Course: Practical Seminar Platforms [T-WIWI-109937]

Responsible: Prof. Dr. Gerhard Satzger
Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each term	2

Assessment
The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class. Please take into account that, beside the written documentation, also a practical component (e.g. implementation of a prototype) is part of the course. Please examine the course description for the particular tasks. The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class). In the winter terms, the course is only offered as a seminar.

Prerequisites
None.

T 3.410 Course: Practical Seminar Servitization [T-WIWI-109939]

Responsible: Prof. Dr. Alexander Mädche
Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

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

Assessment
The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class. Please take into account that, beside the written documentation, also a practical component (e.g. implementation of a prototype) is part of the course. Please examine the course description for the particular tasks. The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class). In the winter terms, the course is only offered as a seminar.

Prerequisites
None.

T 3.411 Course: Practical Seminar: Advanced Analytics [T-WIWI-108765]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

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

Assessment
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

Recommendations
At least one module offered by the institute should have been chosen before attending this seminar.

Additional Information
The course is held in English. The course is not offered regularly.

T 3.412 Course: Practical Seminar: Artificial Intelligence in Service Systems [T-WIWI-112152]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Irregular	1

Exams			
ST 2025	7900320	Practical Seminar Service Innovation	Satzger

Assessment
The assessment of this course is in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class.
Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class).

Prerequisites
None.

Recommendations
Knowledge in the field of Artificial Intelligence in Service Systems is assumed. Therefore, it is recommended to attend the course Artificial Intelligence in Service Systems [2595650] beforehand.

Workload
135 hours

T 3.413 Course: Practical Seminar: Data-Driven Information Systems [T-WIWI-106207]

Responsible: Prof. Dr. Gerhard Satzger
Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Irregular	1

Exams			
ST 2025	7900318	Practical Seminar: Data Science for Industrial Applications	Satzger

Assessment
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

Recommendations
At least one module offered by the institute should have been chosen before attending this seminar.

Additional Information
The course is held in english. The course is not offered regularly.

T 3.414 Course: Practical Seminar: Digital Services [T-WIWI-110888]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each summer term	1

Assessment
The assessment consists of a seminar paper, a presentation of the results and the contribution to the discussion. In the seminar, a maximum score of 60 points can be achieved, consisting of

- maximum 25 points for the documentation (written examination)
- maximum 25 points for the practical assessment
- maximum 10 points for the participation during the discussion sessions

The practical seminar is passed when at least a score of 30 points is achieved.

Prerequisites
None

Recommendations
None

Additional Information
The current range of seminar topics is announced on the following Website:
www.dsi.iism.kit.edu.

T 3.415 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-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each term	2

Events					
WT 24/25	2500008	Practical seminar: Health Care Management	3 SWS	Others (sons / 🗣	Nickel, Mitarbeiter
ST 2025	2550498	Practical seminar: Health Care Management	3 SWS	Seminar / 🧩	Nickel, Mitarbeiter
Exams					
WT 24/25	7900105	Practical Seminar: Health Care Management (with Case Studies)			Nickel

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

Assessment
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.

Recommendations
Basic knowledge as conveyed in the module *Introduction toOperations Research* is assumed.

Additional Information
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.

Workload
135 hours

T 3.416 Course: Practical Seminar: Human-Centered Systems [T-WIWI-113459]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

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

Events					
WT 24/25	2540554	Practical Seminar: Human-Centered Systems	3 SWS	Lecture /	Mädche
ST 2025	2540554	Practical Seminar: Human-Centered Systems	3 SWS	Lecture /	Mädche
Exams					
WT 24/25	7900341	Practical Seminar: Human-Centered Systems			Mädche
ST 2025	7900262	Practical Seminar: Human-Centered Systems			Mädche

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

Assessment
The assessment of this course is in the form of a different type of examination. The assessment is carried out by a practical component, preparing written documentation and actively participating in the discussions. A total of 60 points can be achieved, of which:

- a maximum of 25 points for the written documentation
- a maximum of 25 points for the practical component
- a maximum of 10 points for active participation in the discussions

At least 30 points must be achieved to pass the performance assessment. Please note that a practical component such as conducting a survey or implementing an application is also part of the regular scope of the course in addition to the written documentation. The respective tasks can be found in the announcement on the institute's website https://h-lab.iism.kit.edu.

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

V Practical Seminar: Human-Centered Systems — **Lecture (V) Blended (On-Site/Online)**
2540554, WS 24/25, 3 SWS, Language: English, Open in study portal

V Practical Seminar: Human-Centered Systems — **Lecture (V) Blended (On-Site/Online)**
2540554, SS 2025, 3 SWS, Language: English, Open in study portal

Content
In this practical seminar, students get an individual assignment and develop a running software prototype. Beside the software prototype, the students also deliver a written documentation.

Please find the current open offerings on our website: https://h-lab.iism.kit.edu/thesis.php

Prerequisites

Profound skills in software development are required

Literature

Further literature will be made available in the seminar.

T 3.417 Course: Practical Seminar: Interactive Systems [T-WIWI-111914]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

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

Events					
WT 24/25	2540555	Practical Seminar: Interactive Systems	3 SWS	Lecture /	Mädche
ST 2025	2540555	Practical Seminar: Interactive Systems	3 SWS	Lecture /	Mädche
Exams					
WT 24/25	7900367	Practical Seminar: Interactive Systems			Mädche

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

Assessment
Alternative exam assessment.

The assessment of this course consists of the implementation of a practical component, the preparation of a written documentation, and active participation in the discussions.

A total of 60 points can be achieved, of which:

- maximum 25 points for the written documentation
- maximum 25 points for the practical component
- maximum 10 points for active participation in the discussions

A minimum of 30 points must be achieved to pass this course.

Please note that a practical component, such as conducting a survey or implementing an application, is also part of the course. Please refer to the institute website issd.iism.kit.edu for the current offer of practical seminar theses.

Workload
135 hours

Below you will find excerpts from events related to this course:

V Practical Seminar: Interactive Systems

2540555, SS 2025, 3 SWS, Language: English, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
In this practical seminar, students get an individual assignment and develop a running software prototype. Beside the software prototype, the students also deliver a written documentation.

Please find the current open offerings on our website: https://h-lab.iism.kit.edu/thesis.php

T 3.418 Course: Practical Seminar: Platform Economy [T-WIWI-112154]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each term	1

Assessment
The assessment of this course is in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class. Please take into account that, beside the written documentation, also a practical component (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).

Prerequisites
None.

Additional Information
Teaching and learning format: Seminar

Workload
135 hours

T 3.419 Course: Practical Seminar: Service Innovation [T-WIWI-110887]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Irregular	1

Exams			
ST 2025	7900319	Service Design Thinking	Satzger
ST 2025	7900320	Practical Seminar Service Innovation	Satzger

Assessment
Success is assessed through the preparation of written documentation, a presentation of the results of the practical components carried out and active participation in the discussions (in accordance with §4(2), 3 SPO).

Please note that a practical component such as conducting a survey or implementing an application is also part of the regular scope of the course in addition to the written documentation. Please refer to the course description for the respective tasks.

The overall grade is made up of the weighted components (e.g. documentation, oral presentation, practical work and active participation). The weighting of these components for the grade will be announced at the beginning of the course.

Recommendations
Knowledge of Service Innovation Methods is assumed. Therefore it is recommended (but not mandatory) to attend the course Service Innovation [2540468] beforehand.

Additional Information
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.

Workload
135 hours

T 3.420 Course: Practical Training in Basics of Microsystem Technology [T-MACH-102164]

Responsible: Dr. Arndt Last
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each term	2

Events					
WT 24/25	2143875	Introduction to Microsystem Technology - Practical Course	2 SWS	Practical course / 🗣	Last
WT 24/25	2143877	Introduction to Microsystem Technology - Practical Course	2 SWS	Practical course / 🗣	Last
ST 2025	2143875	Introduction to Microsystem Technology - Practical Course	2 SWS	Practical course / 🗣	Last
Exams					
WT 24/25	76-T-MACH-102164	Practical Training in Basics of Microsystem Technology			Last
ST 2025	76-T-MACH-102164	Practical Training in Basics of Microsystem Technology			Last

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Success is assessed in the form of a written examination lasting 60 minutes.

Prerequisites
none

Below you will find excerpts from events related to this course:

V Introduction to Microsystem Technology - Practical Course

2143875, WS 24/25, 2 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

Literature
Menz, W., Mohr, J.: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 1997
Unterlagen zum Praktikum zur Vorlesung ' Grundlagen der Mikrosystemtechnik'

V Introduction to Microsystem Technology - Practical Course

2143877, WS 24/25, 2 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

Literature
Menz, W., Mohr, J.: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 1997
Unterlagen zum Praktikum zur Vorlesung ' Grundlagen der Mikrosystemtechnik'

V Introduction to Microsystem Technology - Practical Course

2143875, SS 2025, 2 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

Content
In the practical training includes ten experiments:

1. X-ray optics
2. UV-lithography + SEM
3. Micro fluid mixer
4. AFM
5. 3D-printing
6. Scattering at chromium-masks
7. Micro moulding
8. SAW-bio sensorics
9. Nano3D-printer - material transfer in thin layers
10. Electro spinning

Each student takes part in only four experiments.
The experiments are carried out at real workstations at the IMT and coached by IMT-staff.

Organizational issues
Das Praktikum findet in den Laboren des IMT am CN statt. Treffpunkt: Bau 301, vor dem Eingang.

Das "Praktikum" ist das selbe wie das "Laborraktikum", nur benotet! Beide mit schriftlicher Klausur.

Wer teilnehmen möchte, muss sich ab 7.7.2025, 8h00 über das Campussystem unter Veranstaltungen (nicht unter Prüfungen!) auf die Warteliste setzen. Die endgültige Entscheidung, ob man teilnehmen kann, erfolgt erst 25.8.2025.

Literature
Menz, W., Mohr, J.: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 1997
Unterlagen zum Praktikum zur Vorlesung ' Grundlagen der Mikrosystemtechnik'

T 3.421 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-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	1

Assessment
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Additional Information
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 3.422 Course: Predictive Modeling [T-WIWI-110868]

Responsible: Prof. Dr. Fabian Krüger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	2

Exams			
WT 24/25	7900014	Predictive Modeling	Krüger

Assessment
The assessment of this course is a written examination (90 minutes) according to §4(2), 1 of the examination regulation. A bonus can be acquired by successful completion of an assignment (written report + short in-class presentation) during the semester. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4).

Prerequisites
None

Workload
135 hours

T 3.423 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2540529	Price Management	2 SWS	Lecture /	Glenn
ST 2025	2540530	Exercise Price Management	1 SWS	Practice /	Glenn
Exams					
WT 24/25	7900170	Price Management (Nachklausur SoSe 2024)			Geyer-Schulz
ST 2025	7900139	Price Management			Geyer-Schulz

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
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

Recommendations
None

Additional Information
The lecture is offered for the first time in summer term 2016.

Below you will find excerpts from events related to this course:

V Price Management

2540529, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Organizational issues
Termine:

Samstags von 9:00 - 19:00 Uhr

26.04.2025 => Termin 1

10.05.2025 => Termin 2

28.06.2025 => Termin 3

19.07.2025 => Termin 4

Literature

- H. Simon and M. Fassnacht, *Preismanagement*, vol. 4. Wiesbaden: Springer Gabler, 2016.
- T. T. Nagle, J. E. Hogan, und J. Zalee, *The Strategy and Tactics of Pricing: A guide to growing more profitably*. New Jersey: Prentice Hall, 2010.

T 3.424 Course: Pricing [T-WIWI-102883]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each winter term	3

Events					
WT 24/25	2572199	Pricing	3 SWS	Block / 🗣	Schröder, Klarmann, Bill
Exams					
WT 24/25	7900343	Pricing			Klarmann

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Alternative exam assessment. The examination (and thus the grade) is composed of three parts:

1. The design and execution of your own small experimental study around the topic of behavioral pricing (as group work).
2. The processing and presentation of a case study on pricing (as group work).
3. The execution of a simulated price negotiation based on a systematic preparation (usually in teams of two).

Prerequisites
Since the earlier course (a) "Pricing Excellence" and (b) "Price Negotiations and Sales Presentations" become parts of the Pricing course, Pricing cannot be taken if (a) and/or (b) have already been completed.

Recommendations
Students are highly encouraged to actively participate in class.

Additional Information
A small application is required for participation in this class. The application phase usually takes place at the beginning of the lecture period in the winter semester. More information on the application process will be made available on the Marketing and Sales Research Group website (marketing.iism.kit.edu) shortly before the start of the winter semester lecture period. This course is limited to 24 participants.

Below you will find excerpts from events related to this course:

V **Pricing** **Block (B) On-Site**
2572199, WS 24/25, 3 SWS, Language: English, Open in study portal

Content
At the Pricing lecture, students learn about current research and best practices in price management. Delivered in workshop format, the lecture has three key elements:

1. "Behavioral Pricing" workshop
   In this part of the course, central concepts and findings from behavioral pricing research (e.g. price information processing, reference prices, price fairness and mental accounting) are presented and discussed on the basis of important behavioral theories (e.g. prospect theory and information economics). After a brief introduction to experimental research, participants will then conduct their own small experimental study in the form of group work on a hypothesis they have developed on pricing behavior, analyze the data, and present it.

2. "Pricing Excellence" workshop
   In a theory section at the beginning of the course, students are taught theoretical principles of pricing. This includes an introduction to (1) pricing of product prices as well as (2) pricing of net customer prices (development of discount systems). Furthermore, theoretical basics of price enforcement and price monitoring are discussed. This will be followed by a practical application of what has been learned by working on a case study in small groups with a concluding presentation.

3. "Price Negotiation" workshop
   After an introduction to key theories and concepts of negotiation, students prepare and then conduct a simulated price negotiation in small groups with guidance.

Learning Objectives:

Students...

- are familiar with central theories explaining behavioral phenomena regarding consumers dealing with prices
- are able to describe and explain central phenomena of behavioral science with regard to price behavior and derive implications from them
- can formulate their own hypotheses on price behavior and design, conduct and evaluate a suitable experimental study for this purpose
- learn theoretical basics of pricing behavior
- learn the theoretical basics of price enforcement and price monitoring
- apply the acquired knowledge in a practical case study
- know important conceptual basics on the subject of price negotiations
- can prepare and competently conduct price negotiations
- present the results of their group work in a concise and structured manner

All events will take place in presence with compulsory attendance at all dates.

Total time required for 4.5 credit points: approx. 135 hours

Attendance time: 30 hours

Self-study: 105 hours

Organizational issues
Dates will be announced.

T 3.425 Course: Principles of Ceramic and Powder Metallurgy Processing [T-MACH-102111]

Responsible: apl. Prof. Dr. Günter Schell
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2193010	Basic principles of powder metallurgical and ceramic processing	2 SWS	Lecture /	Schell
Exams					
WT 24/25	76-T-MACH-102111	Principles of Ceramic and Powder Metallurgy Processing			Schell, Wagner
ST 2025	76-T-MACH-102111	Principles of Ceramic and Powder Metallurgy Processing			Schell

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment consists of an oral exam (20-30 min) taking place at the agreed date. The re-examination is offered upon agreement.

Prerequisites
none

Workload
120 hours

Below you will find excerpts from events related to this course:

V Basic principles of powder metallurgical and ceramic processing

2193010, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Literature

- R.J. Brook: Processing of Ceramics I+II, VCH Weinheim, 1996
- M.N. Rahaman: Cermamic Processing and Sintering, 2nd Ed., Marcel Dekker, 2003
- W. Schatt ; K.-P. Wieters ; B. Kieback. ".Pulvermetallurgie: Technologien und Werkstoffe", Springer, 2007
- R.M. German. "Powder metallurgy and particulate materials processing. Metal Powder Industries Federation, 2005
- F. Thümmler, R. Oberacker. "Introduction to Powder Metallurgy", Institute of Materials, 1993

T 3.426 Course: Principles of Food Process Engineering [T-CIWVT-101874]

Responsible: PD Dr. Volker Gaukel
Organisation: KIT Department of Chemical and Process Engineering
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Version
Oral examination	9 CP	graded	1

Events					
WT 24/25	2211110	Process Fundamentals by the Example of Food Production	2 SWS	Lecture / 🗣	Gaukel
WT 24/25	2211810	Food Science and Functionality	2 SWS	Lecture / ✕	Seifert
Exams					
ST 2025	7220008	Principles of Food Process Engineering			Gaukel

Legend: 💻 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
none

T 3.427 Course: Principles of Insurance Management [T-WIWI-102603]

Responsible: Prof. Dr. Ute Werner
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Oral examination	4,5 CP	graded	Each summer term	1

Assessment
The assessment consists of oral presentations (incl. papers) within the lecture (according to Section 4 (2), 3 of the examination regulation) and a final oral exam (according to Section 4 (2), 2 of the examination regulation).

The overall grade consists of the assessment of the oral presentations incl. papers (50 percent) and the assessment of the oral exam (50 percent).

The examination will be offered latest until summer term 2017 (beginners only).

Prerequisites
None

Recommendations
None

T 3.428 Course: Principles of Whole Vehicle Engineering [T-MACH-114075]

Responsible: Dr. Manfred Harrer
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each term	1

Exams			
ST 2025	76-T-MACH-114075	Principles of Whole Vehicle Engineering	Harrer

Assessment
Written examination

Duration: 90 minutes

Auxiliary means: none

Prerequisites
T-MACH-114095 - Fundamentals of Automobile Development must not be started.

Additional Information
The course is offered in German.

Workload
120 hours

T 3.429 Course: Probabilistic Time Series Forecasting Challenge [T-WIWI-111387]

Responsible: Prof. Dr. Fabian Krüger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Irregular	2

Events					
WT 24/25	2500080	Probabilistic Time Series Forecasting Challenge	2 SWS	Practice / 🖳	Bracher, Koster, Lerch, Krüger
WT 24/25	2500081	Probabilistic Time Series Forecasting Challenge		Project (P / 🖳🗘	Krüger, Bracher, Koster, Lerch
Exams					
WT 24/25	7900338	Probabilistic Time Series Forecasting Challenge			Krüger, Lerch

Legend: 🖳 Online, 🗘 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Alternative exam assessment. Necessary conditions to pass the course:

- Weekly submission of statistical forecasts during the semester (excluding the Christmas break),
- Presentation (ca. 20 minutes) during the semester,
- Submission of a final report (5-10 pages) around the end of the semester.

Grading is based on the presentation (30%) and the final report (70%).

Prerequisites
Good methodological knowledge in statistics and data science.
Good knowledge in applied data analysis, incl. programming skills in R, Python or similar.
Knowledge of time series analysis is helpful, but not required.

Additional Information
The course is limited in participation. Participants will be selected via the WIWI portal.

Workload
135 hours

Below you will find excerpts from events related to this course:

V Probabilistic Time Series Forecasting Challenge

2500081, WS 24/25, SWS, Language: English, Open in study portal

Project (PRO)
Blended (On-Site/Online)

Content
Statistical forecasts are relevant across all fields of society. In this data science project, students make, evaluate and communicate their own statistical forecasts in a real-time setting. We consider probabilistic forecasts that involve a measure of uncertainty in addition to a point forecast. Students are asked to make forecasts of several real-world time series (including weather variables and the DAX stock market index). Historical data on all series are available from public sources that are updated as time proceeds. While the time series differ from each other in important ways, statistical methods can meaningfully be used for prediction in all cases. We focus on quantile forecasts which are useful to measure forecast uncertainty in a relatively simple way.

Organizational issues
Short description

In this data science project, students make and evaluate statistical forecasts in a realistic setup (involving real-time predictions and real-world time series data). A kickoff meeting will take place in person in mid October. During the semester, there will be a weekly online meeting in which students and instructors discuss the current state of the forecasting challenge.

Prerequisites

Students should have a good working knowledge of statistics and data science, including proficiency in a programming language like R, Python, or Matlab. Knowledge of time series analysis is helpful but not strictly required. Motivation and curiosity are particularly important in this course format that requires regular, active participation over the whole semester.

Please note that the number of participants is limited due to the interactive course format. Application takes place via the Wiwi portal, where further information is available.

Examination rules

The course counts for 4.5 credit points (Leistungspunkte). Examination is via an alternative exam assessment (§4(2), 3 SPO).
Necessary conditions to pass the course:
1) Weekly submission of statistical forecasts during the semester, excluding the Christmas break,
2) A presentation (approx. 20 minutes) during the semester,
3) Submission of a final report (5-10 pages) around the end of the semester.
The presentation and the final report should describe the forecasting methods and their statistical evaluation. Grading is based on the presentation (30%) and the final report (70%).

T 3.430 Course: Problem Solving, Communication and Leadership [T-WIWI-102871]

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	2 CP	graded	Each summer term	2

Events					
ST 2025	2577910	Problem solving, communication and leadership	1 SWS	Lecture / 🗣	Lindstädt
Exams					
WT 24/25	7900070	Problem Solving, Communication and Leadership			Lindstädt
ST 2025	7900068	Problem Solving, Communication and Leadership			Lindstädt

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written exam (30 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Below you will find excerpts from events related to this course:

V Problem solving, communication and leadership

2577910, SS 2025, 1 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The course highlights the aspects of problem solving and communication by first providing a structured look at how problem solving processes work. Participants will be empowered to identify, structure, analyze and communicate problems effectively. In addition, they are introduced to precise concepts for systematically structuring problem-solving processes. They learn how to apply and analyze structured communication in diagrams and presentations.

In addition, the course teaches key leadership concepts and frameworks that address the influence of situation, leadership personality and characteristics of those being led. Driven by current and practical perspectives, the course thus aims to teach cross-disciplinary skills.

In addition, through intensive interaction via selected case studies, participants are prepared for the practical application of what they have learned in various professional contexts.

Structure

The lectures of the course are available to students online as recordings, while the course dates are reserved for active discussion of practice-relevant case studies.

Learning Objectives

Upon completion of the course, students will be able to,

- structure problem-solving processes,
- apply the principles of goal-oriented communication in diagrams and presentations,
- Understand leadership decisions and place them in the context of situation and personality.

Recommendations:

None.

Workload:

- Total workload for 2 credit hours: approximately 30*2 hours.
- Thereof attendance time: 12-14 hours
- Remainder for preparation and post-processing as well as exam preparation.

Success Monitoring:

Success is assessed in the form of a written examination (30 min.) (in accordance with §4(2), 1 SPO) at the beginning of the lecture-free period of the semester. The examination is offered every semester and can be repeated at any regular examination date.

Organizational issues
Blockveranstaltung, Termine: 28.05.25/18.06.25/09.07.25/16.07.25/23.07.25/30.07.25

Literature
Verpflichtende Literatur:

Die relevanten Auszüge und zusätzlichen Quellen werden in der Veranstaltung bekannt gegeben.

Ergänzende Literatur:

- Hungenberg, Harlad: Problemlösung und Kommunikation, 3. Aufl. München 2010

- Zelazny, Gene; Delker, Christel: Wie aus zahlen Bilder werden, 6. Aufl. Wiesbaden 2008

- Minto, Barbara: Das Prinzip der Pyramide: Ideen klar, verständlich und erfolgreich kommunizieren. 2005

T 3.431 Course: Procedures of Remote Sensing [T-BGU-103542]

Responsible: Dr.-Ing. Uwe Weidner
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Version
Oral examination	3 CP	graded	2

Events					
ST 2025	6020243	Procedures of Remote Sensing	2 SWS	Lecture / 🗣	Weidner
Exams					
ST 2025	8280103542	Procedures of Remote Sensing			Weidner

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-BGU-101638 - Procedures of Remote Sensing, Prerequisite must have been passed.

T 3.432 Course: Procedures of Remote Sensing, Prerequisite [T-BGU-101638]

Responsible: Dr.-Ing. Uwe Weidner
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework	1 CP	pass/fail	Each summer term	1

Events					
ST 2025	6020244	Procedures of Remote Sensing, Excercise	1 SWS	Practice / 🗣	Weidner
Exams					
ST 2025	8284101638	Procedures of Remote Sensing, Prerequisite			Weidner

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
30 hours

T 3.433 Course: Process Engineering [T-BGU-101844]

Responsible: Dr.-Ing. Harald Schneider
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	3 CP	graded	Each term	1 terms	1

Events					
WT 24/25	6241703	Process Engineering	2 SWS	Lecture / 🗣	Schneider, Waleczko
Exams					
WT 24/25	8240101844	Process Engineering			Schneider
ST 2025	8240101844	Process Engineering			Schneider

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.434 Course: Process Fundamentals by the Example of Food Production [T-CIWVT-106058]

Responsible: PD Dr. Volker Gaukel
Organisation: KIT Department of Chemical and Process Engineering
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Version
Written examination	3 CP	graded	2

Events					
WT 24/25	2211110	Process Fundamentals by the Example of Food Production	2 SWS	Lecture / 🗣	Gaukel
Exams					
WT 24/25	7220007	Process fundamentals by the example of food production			Gaukel
ST 2025	7220007	Process fundamentals by the example of food production			Gaukel

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
none

T 3.435 Course: Process Mining [T-WIWI-109799]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	2

Events					
ST 2025	2511204	Process Mining	2 SWS	Lecture / 🗣	Oberweis, Schreiber
ST 2025	2511205	Exercise Process Mining	1 SWS	Practice / 🗣	Oberweis, Schreiber, Rybinski
Exams					
WT 24/25	79AIFB_PM_A5	Process Mining			Oberweis
ST 2025	79AIFB_PM_C2	Process Mining (Registration until 21.07.2025)			Oberweis

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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

Additional Information
Former name (up to winter semester 2018/1019) "Workflow Management".

Below you will find excerpts from events related to this course:

V Process Mining

2511204, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The area of process mining covers approaches which aim at deducting new knowledge on the basis of logfiles generated by information systems. Such information systems are e.g., workflow-management-systems which are used for an efficient control of processes in enterprises and organisations. The lecture introduces the foundations of processes and respective modeling and analysis techniques. In the following, the foundations of process mining and the three classical types of approaches - discovery, conformance and enhancement - will be taught. In addition to the theoretical basics, tools, application scenarios in practice and open research questions are covered as well.

Learning objectives:

Students

- understand the concepts and approaches of process mining and know how they are applied,
- create and evaluate business process models,
- analyze static and dynamic properties of workflows,
- apply approaches and tools of process mining.

Recommendations:

Knowledge of course Applied Informatics - Modelling is expected.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

Literature

- W. van der Aalst, H. van Kees: Workflow Management: Models, Methods and Systems, Cambridge, The MIT Press, 2002.
- W. van der Aalst: Process Mining: Data Science in Action. Springer, 2016.
- J. Carmona, B. van Dongen, A. Solti, M. Weidlich: Conformance Checking: Relating Processes and Models. Springer, 2018.
- A. Drescher, A. Koschmider, A. Oberweis: Modellierung und Analyse von Geschäftsprozessen: Grundlagen und Übungsaufgaben mit Lösungen. De Gruyter Studium, 2017.
- A. Oberweis: Modellierung und Ausführung von Workflows mit Petri-Netzen. Teubner-Reihe Wirtschaftsinformatik, B.G. Teubner Verlag, 1996.
- R. Peters, M. Nauroth: Process-Mining: Geschäftsprozesse: smart, schnell und einfach, Springer, 2019.
- F. Schönthaler, G.Vossen, A. Oberweis, T. Karle: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer, 2012.
- M. Weske: Business Process Management: Concepts, Languages, Architectures. Springer, 2012.

Weitere Literatur wird in der Vorlesung bekannt gegeben.

T 3.436 Course: Product- and Production-Concepts for Modern Automobiles [T-MACH-110318]

Responsible: Dr. Stefan Kienzle
Dr. Dieter Steegmüller
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2149670	Product- and Production-Concepts for modern Automobiles	2 SWS	Lecture /	Steegmüller, Kienzle
Exams					
WT 24/25	76-T-MACH-110318	Product- and Production-Concepts for modern Automobiles			Steegmüller, Kienzle

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Assessment
Oral Exam (20 min)

Prerequisites
T-MACH-105166 - Materials and Processes for Body Leightweight Construction in the Automotive Industry must not have been started.

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from events related to this course:

V Product- and Production-Concepts for modern Automobiles

2149670, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
The lecture illuminates the practical challenges of modern automotive engineering. As former leaders of the automotive industry, the lecturers refer to current aspects of automotive product development and production.

The aim is to provide students with an overview of technological trends in the automotive industry. In this context, the course also focuses on changes in requirements due to new vehicle concepts, which may be caused by increased demands for individualisation, digitisation and sustainability. The challenges that arise in this context will be examined from both a production technology and product development perspective and will be illustrated with practical examples thanks to the many years of industrial experience of both lecturers.

The topics covered are:

- General conditions for vehicle and body development
- Integration of new drive technologies
- Functional requirements (crash safety etc.), also for electric vehicles
- Development Process at the Interface Product & Production, CAE/Simulation
- Energy storage and supply infrastructure
- Aluminium and lightweight steel construction
- FRP and hybrid parts
- Battery, fuel cell and electric motor production
- Joining technology in modern car bodies
- Modern factories and production processes, Industry 4.0.

Learning Outcomes:

The students …

- are able to name the presented general conditions of vehicle development and are able to discuss their influences on the final product using practical examples.
- are able to name the various lightweight approaches and identify possible areas of application.
- are able to identify the different production processes for manufacturing lightweight structures and explain their functions.
- are able to perform a process selection based on the methods and their characteristics.

Workload:

regular attendance: 25 hours
self-study: 95 hours

Organizational issues
Termine werden über Ilias bekannt gegeben.

Bei der Vorlesung handelt es sich um eine Blockveranstaltung. Eine Anmeldung über Ilias ist erforderlich.

Zur Vertiefung des im Rahmen der Lehrveranstaltung erworbenen Wissens werden die theoretischen Vorlesungseinheiten durch Praxiseinheiten im Umfeld der Karlsruher Forschungsfabrik (https://www.karlsruher-forschungsfabrik.de) unterstützt.

The lecture is a block course. An application in Ilias is mandatory.

The theoretical lectures are complemented by practical lectures in the Karlsruhe Research Factory (https://www.karlsruher-forschungsfabrik.de/en.html) to deepen the acquired knowledge.

Literature
Medien:
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.437 Course: Product Lifecycle Management [T-MACH-105147]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each winter term	2

Events					
WT 24/25	2121350	Product Lifecycle Management	2 SWS	Lecture / 🗣	Ovtcharova, Meyer, Rönnau
Exams					
WT 24/25	76-T-MACH-105147	Product Lifecycle Management			Ovtcharova, Meyer, Rönnau
WT 24/25	76-T-MACH-105147-mdl	Product Lifecycle Management			Elstermann
ST 2025	76-T-MACH-105147	Product Lifecycle Management			Ovtcharova, Rönnau, Meyer

Legend: 💻 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Writen examination 90 min.

Prerequisites
None

Workload
120 hours

Below you will find excerpts from events related to this course:

V Product Lifecycle Management

2121350, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The course includes:

- Basics for product data management and data exchange
- IT system solutions for Product Lifecycle Management (PLM)
- Economic viability analysis and implementation problems
- Illustrative scenario for PLM using the example of the institute's own I4.0Lab

After successful attendance of the course, students can:

- identify the challenges of data management and exchange and describe solution concepts for these challenges.
- clarify the management concept PLM and its goals and highlight the economic benefits.
- explain the processes required to support the product life cycle and describe the most important business software systems (PDM, ERP, ...) and their functions.

Literature
Vorlesungsfolien.

V. Arnold et al: Product Lifecycle Management beherrschen, Springer-Verlag, Heidelberg, 2005.

J. Stark: Product Lifecycle Management, 21st Century Paradigm for Product Realisation, Springer-Verlag, London, 2006.

A. W. Scheer et al: Prozessorientiertes Product Lifecycle Management, Springer-Verlag, Berlin, 2006.

J. Schöttner: Produktdatenmanagement in der Fertigungsindustrie, Hanser-Verlag, München, 1999.

M.Eigner, R. Stelzer: Produktdaten Management-Systeme, Springer-Verlag, Berlin, 2001.

G. Hartmann: Product Lifecycle Management with SAP, Galileo press, 2007.

K. Obermann: CAD/CAM/PLM-Handbuch, 2004.

T 3.438 Course: Production and Logistics [T-WIWI-111632]

Responsible: Prof. Dr. Wolf Fichtner
Prof. Dr. Stefan Nickel
Prof. Dr. Frank Schultmann

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	1

Exams			
WT 24/25	7900231	Production and Logistics	Schultmann, Nickel, Fichtner
ST 2025	7900080	Production and Logistics	Schultmann, Nickel, Fichtner

Assessment
Written examination (60 min) on the course "Production and Logistics". The exam is offered at the beginning of each lecture-free period. Repeat examinations are possible at any regular examination date.

Prerequisites
None

T 3.439 Course: Production and Logistics Management [T-WIWI-102632]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	5,5 CP	graded	Each summer term	1

Events					
ST 2025	2581954	Production and Logistics Management	2 SWS	Lecture / 🗣	Schultmann, Rudi
ST 2025	2581955	Production and Logistics Managment	2 SWS	Practice / 🗣	Alikhah
Exams					
WT 24/25	7981954	Production and Logistics Management			Schultmann
ST 2025	7981954	Production and Logistics Management			Schultmann

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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.

Prerequisites
None

Recommendations
None

Below you will find excerpts from events related to this course:

V Production and Logistics Management

2581954, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
This course covers central tasks and challenges of operative production and logistics management. Students get to know the set-up and mode of planning systems such as production planning and control systems, enterprise resource planning systems and advanced planning systems to cope with the accompanying planning tasks in supply chain management. Methods to solve these tasks from the field of operational research will be explored with respect to manufacturing program planning, material requirement planning, lot size problems and scheduling. Alongside to MRP II (Manufacturing Resources Planning), students will be introduced to integrated supply chain management approaches. Finally, commercially available planning systems will be presented and discussed.

Literature
Wird in der Veranstaltung bekannt gegeben.

T 3.440 Course: Production Economics and Sustainability [T-WIWI-102820]

Responsible: Prof. Dr. Frank Schultmann
Dr.-Ing. Rebekka Volk
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each winter term	1

Events					
WT 24/25	2581960	Production Economics and Sustainability	2 SWS	Lecture / 🗣	Volk, Schultmann, Bischof
Exams					
WT 24/25	7981960	Production Economics and Sustainability			Schultmann
ST 2025	7981960	Production Economics and Sustainability			Schultmann

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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.

Workload
105 hours

Below you will find excerpts from events related to this course:

V Production Economics and Sustainability

2581960, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The analysis and management of material flows on the company level and above will be the focus of this lecture. Herein, the discussion will be about cost-effective and environmentally acceptable steps to avoid, abate and recycle emissions and waste as well as ways of efficient resources handling. As methods material flow analysis (MFA), life cycle assessment (LCA) and OR methods, e.g. for decision support, are introduced.

Topics:
- regulations related to materials and substances
- raw materials, reserves and their availabilities/lifetimes
- material and substance flow analysis (MFA/SFA)
- material related ecoprofiles, e.g. Carbon Footprint
- LCA
- resource efficiency
- emission abatement
- waste management and closed-loop recycling
- raw material oriented production systems
- environmental management (EMAS, ISO 14001, Ecoprofit), eco-controlling

Organizational issues
Seminarraum Uni-West, Geb. 06.33

Literature
wird in der Veranstaltung bekannt gegeben

T 3.441 Course: Production Technology for E-Mobility [T-MACH-110984]

Responsible: Prof. Dr.-Ing. Jürgen Fleischer
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	2

Events					
ST 2025	2150605	Production Technology for E-Mobility	2 SWS	Lecture / 🗣	Fleischer
Exams					
WT 24/25	76-T-MACH-110984	Production Technology for E-Mobility			Fleischer
ST 2025	76-T-MACH-112969	Production Technology for E-Mobility			Fleischer

Legend: 🖥 Online, 🌸 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Written Exam (60 min)

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from events related to this course:

V Production Technology for E-Mobility

2150605, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
In the lecture Production Engineering for Electromobility the students should be enabled to design, select and develop production processes for the production of the components of an electric drive train (electric motor, battery cells, fuel cells) by using research-oriented teaching. To apply what has been learned, practical appointments are taking place at the Karlsruhe Forschungsfabrik as part of the course.

Learning Outcomes:

The students are able to:

- describe the structure and function of a fuel cell, an electric traction drive and a batterysystem.
- reproduce the process chains for the production of the components fuel cell, battery and electric traction drive.
- apply methodical tools to solve problems along the process chain.
- derive the challenges in the production of electric drives for electric mobility.
- describe the factors influencing the individual process steps on each other using the process chain of Li-ion battery cells.
- enumerate or describe the necessary process parameters to counteract the influencing factors of the process steps in Li-ion battery cell production.
- apply methodical tools to solve problems along the process chain for the production of Li-ion battery cells.
- derive the challenge of mounting and dismounting battery modules.
- derive the challenges in the production of fuel cells for use in mobility.
- develop solutions to overcome challenges in the production of fuel cells.

Workload:

regular attendance: 42 hours
self-study: 78 hours

Organizational issues
Zur Vertiefung des im Rahmen der Lehrveranstaltung erworbenen Wissens werden die theoretischen Vorlesungseinheiten durch Praxiseinheiten im Umfeld der Karlsruher Forschungsfabrik (https://www.karlsruher-forschungsfabrik.de) unterstützt.

Zwei der Veranstaltungstermine finden in Form von Praktika in der Forschungsfabrik statt. Hier sollen die Studierenden das in der Vorlesung vermittelte Wissen durch praktische Tätigkeiten an Demonstratoranlagen der Brennstoffzellenfertigung anwenden. Diese sollen auch die kreative Lösungskompetenz der Studierenden fördern. Die Teilnahme an den Praxiseinheiten wird für die Teilnahme an der Prüfung vorausgesetzt.

The theoretical lectures are complemented by practical lectures in the Karlsruhe Research Factory (https://www.karlsruher-forschungsfabrik.de/en.html) to deepen the acquired knowledge.

Two of the course dates take the form of practical training in the Forschungsfabrik. Here, students will apply the knowledge imparted in the lectures by carrying out practical tasks on demonstrator systems for fuel cell production. These are also designed to foster students' creative problem-solving skills. Participation in the practical units is a prerequisite for taking the exam.

Literature
Skript zur Veranstaltung wird über Ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/)

T 3.442 Course: Production, Logistics and Information Systems [T-WIWI-111602]

Responsible: Prof. Dr. Wolf Fichtner
Prof. Dr. Andreas Geyer-Schulz
Prof. Dr. Alexander Mädche
Prof. Dr. Stefan Nickel
Prof. Dr. Frank Schultmann
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each winter term	2

Events					
WT 24/25	2600004		2 SWS	Lecture	Mädche
WT 24/25	2600005	Produktion und Logistik	2 SWS	Lecture / 🗣	Fichtner, Nickel, Schultmann
WT 24/25	2610029		2 SWS	Tutorial (	Nickel
Exams					
WT 24/25	7900154	Production, Logistics and Information Systems			Schultmann, Nickel, Weinhardt, Mädche, Geyer-Schulz, Fichtner
ST 2025	7900077	Production, Logistics and Information Systems			Schultmann, Nickel, Fichtner, Weinhardt, Mädche, Geyer-Schulz

Legend: 🖥 Online, 🌸 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Written Exam (90 min). The examination is offered at the beginning of each lecture-free period. Repeat examinations are possible at any regular examination date.

Workload
150 hours

Below you will find excerpts from events related to this course:

V 2600004, WS 24/25, 2 SWS, Open in study portal **Lecture (V)**

T 3.443 Course: Programming [T-INFO-101531]

Responsible: Prof. Dr.-Ing. Anne Koziolek
Prof. Dr. Ralf Reussner

Organisation: KIT Department of Informatics

Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Examination of another type	5 CP	graded	Each winter term	1

Events					
WT 24/25	2424004	Programming	4 SWS	Lecture / Practice (	Koziolek
ST 2025	2400083	Programming Exercise	0 SWS	Practice / 🗣	Koziolek
Exams					
WT 24/25	7500075	Programming			Koziolek
ST 2025	7500195	Programming			Reussner, Koziolek

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-INFO-101967 - Programming Pass must have been passed.

T 3.444 Course: Programming Pass [T-INFO-101967]

Responsible: Prof. Dr.-Ing. Anne Koziolek
Prof. Dr. Ralf Reussner

Organisation: KIT Department of Informatics

Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Coursework	0 CP	pass/fail	Each term	1

Events					
WT 24/25	2424004	Programming	4 SWS	Lecture / Practice (	Koziolek
ST 2025	2400083	Programming Exercise	0 SWS	Practice / 🗣	Koziolek
Exams					
WT 24/25	7500074	Programming Pass			Koziolek
ST 2025	7500022	Programming Pass			Koziolek, Reussner

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

T 3.445 Course: Project in Applied Remote Sensing [T-BGU-101814]

Responsible: Prof. Dr.-Ing. Stefan Hinz
Dr.-Ing. Uwe Weidner
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Version
Coursework	1 CP	pass/fail	1

Events					
ST 2025	6020245	Project Exercise Applied Remote Sensing	2 SWS	Practice / 🗣	Hinz, Weidner, Wursthorn
Exams					
ST 2025	8284101814	Project in Applied Remote Sensing			Weidner

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-BGU-101638 - Procedures of Remote Sensing, Prerequisite must have been passed.

Workload
30 hours

T 3.446 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-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	5 CP	graded	Each winter term	3

Events					
WT 24/25	2512501	Practical Course Cognitive automobiles and robots (Master)	3 SWS	Practical course /	Zöllner, Daaboul
Exams					
WT 24/25	7900107	Advanced Lab Cognitive Automobile and Robots (Master)			Zöllner

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
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

Workload
150 hours

Below you will find excerpts from events related to this course:

V Practical Course Cognitive automobiles and robots (Master)

2512501, WS 24/25, 3 SWS, Language: German/English, Open in study portal

Practical course (P)
Blended (On-Site/Online)

Content
The lab is intended as a practical supplement to courses such as "Machine Learning 1/2".
Scientific topics, mostly in the area of autonomous driving and robotics, will be addressed in joint work with ML/KI methods. The goal of the internship is for participants to design, develop, and evaluate ML Software system.

In addition to the scientific goals, such as the study and application of methods, the aspects of project-specific teamwork in research (from specification to presentation of results) are also worked on in this internship.

The individual projects require the analysis of the set task, selection of appropriate methods, specification and implementation and evaluation of the solution approach. Finally, the selected solution is to be documented and presented in a short lecture.

Learning Objectives:

- Students will be able to practically apply theoretical knowledge from lectures on machine learning to a selected area of current research.
- Students will be proficient in analyzing and solving thematic problems.
- Students will be able to evaluate, document, and present their concepts and results.

Recommendations:

- Theoretical knowledge of machine learning and/or AI.
- Python knowledge
- Initial experience with deep learning frameworks such as PyTorch/Jax/Tensorflow may be beneficial.

Workload:

The workload of 5 credit points consists of practical implementation of the selected solution, as well as time for literature research and planning/specification of the selected solution. In addition, a short report and presentation of the work performed will be prepared.

Organizational issues
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

T 3.447 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-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	5 CP	graded	Each summer term	3

Events					
ST 2025	2512500	Project Lab Machine Learning	3 SWS	Practical course /	Daaboul, Zöllner, Schneider
Exams					
ST 2025	7900086	Project Lab Machine Learning			Zöllner

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Assessment
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

Workload
150 hours

Below you will find excerpts from events related to this course:

V Project Lab Machine Learning

2512500, SS 2025, 3 SWS, Language: German/English, Open in study portal

Practical course (P)
Blended (On-Site/Online)

Content
The lab is intended as a practical supplement to lectures such as "Machine Learning". The theoretical basics are applied in the lab course. The aim of the lab course is that the participants work together to design, develop and evaluate a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

In addition to the scientific objectives involved in the investigation and application of the methods, aspects of project-specific teamwork in research (from specification to presentation of the results) are also developed in this practical course.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and implementation and evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can practically apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles.
- Students master the analysis and solution of corresponding problems in a team.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning, C/C++ knowledge, Python knowledge

Workload:

The workload of 5 credit points consists of the time spent in the lab for practical implementation of the selected solution, as well as the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.
Registration and further information can be found in the WiWi-portal.

T 3.448 Course: Project Management [T-WIWI-103134]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each winter term	1

Events					
WT 24/25	2581963	Project Management	2 SWS	Lecture / 🗣	Schultmann, Volk
Exams					
WT 24/25	7981963	Project Management			Schultmann
ST 2025	7981963	Project Management			Schultmann

Legend: 🖥 Online, Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
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.

Prerequisites
None

Recommendations
None

Below you will find excerpts from events related to this course:

V Project Management

2581963, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content

1. Introduction
2. Principles of Project Management
3. Project Scope Management
4. Time Management and Resource Scheduling
5. Cost Management
6. Quality Management
7. Risk Management
8. Stakeholder
9. Communication, Negotiation and Leadership
10. Project Controlling
11. Agile Project Management

Literature
Wird in der Veranstaltung bekannt gegeben.

T 3.449 Course: Project Management in Construction and Real Estate Industry I [T-BGU-103432]

Responsible: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	3 CP	graded	Each winter term	1 terms	2

Events					
WT 24/25	6241701	Construction Project Management	4 SWS	Lecture / Practice (/ 🗣	Haghsheno, Mitarbeiter/innen
Exams					
WT 24/25	8240103432	Project Management in Construction and Real Estate Industry I			Haghsheno

Legend: 📱 Online, 🎛 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
see German version

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
90 hours

Below you will find excerpts from events related to this course:

V Construction Project Management

6241701, WS 24/25, 4 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
This course provides a comprehensive and in-depth introduction to construction project management. It takes a closer look at the organisation and delivery of a construction project from the client's perspective. Selected project management content is taught and applied in teamwork within the context of four practice-based case studies. At the end of the semester, the results are presented in a role play (acquisition meeting with a client).

Organizational issues
Donnerstags vom 24.10.2024 bis 13.02.2025, jeweils 14:00 – 17:15 Uhr (hybrid)

Literature

- AHRENS, Hannsjörg; BASTIAN, Klemens; MUCHOWSKI, Lucian (Hrsg.) (2021): *Handbuch Projektsteuerung - Baumanagement: Ein praxisorientierter Leitfaden mit zahlreichen Hilfsmitteln und Arbeitsunterlagen*, 6. Auflage, Fraunhofer IRB Verlag, Stuttgart
- FEWINGS, Peter; HENJEWELE, Christian (2019): *Construction Project Management – An Integrated Approach*, 3. Auflage, Routledge, New York (USA)
- GPM Deutsche Gesellschaft für Projektmanagement e. V. (Hrsg.) (2017): *Individual Competence Baseline für Projektmanagement (Version 4.0)*, 1. Auflage, GPM Deutsche Gesellschaft für Projektmanagement e. V., Nürnberg
- HAGHSHENO, Shervin; JOHN, Paul Christian (2024): *Bauherrnseitige Projektmanagement-Dienstleistungen in Deutschland*, Forschungsbericht, DVP – Deutscher Verband für Projektmanagement in der Bau- und Immobilienwirtschaft e. V.
- HUEMANN, Martina; TURNER, J. Rodney (Hrsg.) (2024): *The Handbook of Project Management*, 6. Auflage, Routledge, New York (USA)
- KOCHENDÖRFER, Bernd; LIEBCHEN, Jens H.; VIERING, Markus G. (2021): *Bau-Projekt-Management: Grundlagen und Vorgehensweisen*, 5. Auflage, Springer Vieweg, Wiesbaden
- SCHULZ, Markus (2020): *Projektmanagement: Zielgerichtet. Effizient. Klar.*, 2. Auflage, UVK Verlag, Tübingen

T 3.450 Course: Project Management in Construction and Real Estate Industry II [T-BGU-103433]

Responsible: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	3 CP	graded	Each winter term	1 terms	2

Events					
WT 24/25	6241701	Construction Project Management	4 SWS	Lecture / Practice (/ 🗣	Haghsheno, Mitarbeiter/innen
Exams					
WT 24/25	8240103433	Project Management in Construction and Real Estate Industry II			Haghsheno

Legend: 📱 Online, 🎛 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
see German version

Prerequisites
Project Management in Construction and Real Estate Industry I (T-BGU-103432) has to be passed.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-BGU-103432 - Project Management in Construction and Real Estate Industry I must have been passed.

Recommendations
none

Additional Information
none

Workload
90 hours

Below you will find excerpts from events related to this course:

V Construction Project Management

6241701, WS 24/25, 4 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
This course provides a comprehensive and in-depth introduction to construction project management. It takes a closer look at the organisation and delivery of a construction project from the client's perspective. Selected project management content is taught and applied in teamwork within the context of four practice-based case studies. At the end of the semester, the results are presented in a role play (acquisition meeting with a client).

Organizational issues
Donnerstags vom 24.10.2024 bis 13.02.2025, jeweils 14:00 – 17:15 Uhr (hybrid)

Literature

- AHRENS, Hannsjörg; BASTIAN, Klemens; MUCHOWSKI, Lucian (Hrsg.) (2021): *Handbuch Projektsteuerung - Baumanagement: Ein praxisorientierter Leitfaden mit zahlreichen Hilfsmitteln und Arbeitsunterlagen*, 6. Auflage, Fraunhofer IRB Verlag, Stuttgart
- FEWINGS, Peter; HENJEWELE, Christian (2019): *Construction Project Management – An Integrated Approach*, 3. Auflage, Routledge, New York (USA)
- GPM Deutsche Gesellschaft für Projektmanagement e. V. (Hrsg.) (2017): *Individual Competence Baseline für Projektmanagement (Version 4.0)*, 1. Auflage, GPM Deutsche Gesellschaft für Projektmanagement e. V., Nürnberg
- HAGHSHENO, Shervin; JOHN, Paul Christian (2024): *Bauherrnseitige Projektmanagement-Dienstleistungen in Deutschland*, Forschungsbericht, DVP – Deutscher Verband für Projektmanagement in der Bau- und Immobilienwirtschaft e. V.
- HUEMANN, Martina; TURNER, J. Rodney (Hrsg.) (2024): *The Handbook of Project Management*, 6. Auflage, Routledge, New York (USA)
- KOCHENDÖRFER, Bernd; LIEBCHEN, Jens H.; VIERING, Markus G. (2021): *Bau-Projekt-Management: Grundlagen und Vorgehensweisen*, 5. Auflage, Springer Vieweg, Wiesbaden
- SCHULZ, Markus (2020): *Projektmanagement: Zielgerichtet. Effizient. Klar.*, 2. Auflage, UVK Verlag, Tübingen

T 3.451 Course: Project Paper Lean Construction [T-BGU-101007]

Responsible: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	1,5 CP	graded	Each winter term	1 terms	1

Events					
WT 24/25	6241901	Lean Construction	4 SWS	Lecture / Practice (/	Haghsheno, Mitarbeiter/innen
Exams					
WT 24/25	8246101007	Project paper Lean Construction			Haghsheno

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
project:

report, appr. 10 pages, and
presentation, appr. 10 min.

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
40 hours

T 3.452 Course: Project Studies [T-BGU-101847]

Responsible: Prof. Dr.-Ing. Sascha Gentes
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each summer term	1 terms	1

Events					
ST 2025	6243801	Project Studies	2 SWS	Lecture / Practice (/	Gentes
Exams					
WT 24/25	8240101847	Project Studies			Gentes
ST 2025	8240101847	Project Studies			Gentes

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.453 Course: Project Workshop: Automotive Engineering [T-MACH-102156]

Responsible: Dr.-Ing. Michael Frey
Dr.-Ing. Martin Gießler
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	6 CP	graded	Each term	1

Events					
WT 24/25	2115817	Project Workshop: Automotive Engineering	3 SWS	Lecture / 🗣	Gießler, Frey
ST 2025	2115817	Project Workshop: Automotive Engineering	3 SWS	Lecture / 🗣	Gießler, Frey

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Oral examination

Duration: 30 up to 40 minutes

Auxiliary means: none

Prerequisites
none

Workload
180 hours

Below you will find excerpts from events related to this course:

V Project Workshop: Automotive Engineering

2115817, WS 24/25, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
During the Project Workshop Automotive Engineering a team of six persons will work on a task given by an German industrial partner using the instruments of project management. The task is relevant for the actual business and the results are intended to be industrialized after the completion of the project workshop.

The team will generate approaches in its own responsibility and will develop solutions for practical application. Coaching will be supplied by both, company and institute.

At the beginning in a start-up meeting goals and structure of the project will be specified. During the project workshop there will be weekly team meetings. Also a milestone meeting will be held together with persons from the industrial company. In a final presentation the project results will be presented to the company management and to institute representatives.

Learning Objectives:

During the Project Workshop Automotive Engineering a team of six persons will work on a task given by an German industrial partner using the instruments of project management. The task is relevant for the actual business and the results are intended to be industrialized after the completion of the project workshop.

The team will generate approaches in its own responsibility and will develop solutions for practical application. Coaching will be supplied by both, company and institute.

At the beginning in a start-up meeting goals and structure of the project will be specified. During the project workshop there will be weekly team meetings. Also a milestone meeting will be held together with persons from the industrial company. In a final presentation the project results will be presented to the company management and to institute representatives.

Organizational issues
Begrenzte Teilnehmerzahl mit Auswahlverfahren, in deutscher Sprache. Bewerbungen sind am Ende des vorhergehenden Semesters einzureichen.
Termin und Raum: siehe Institutshomepage.

Limited number of participants with selection procedure, in German language. Please send the application at the end of the previous semester

Date and room: see homepage of institute.

Literature
Steinle, Claus; Bruch, Heike; Lawa, Dieter (Hrsg.), Projektmanagement, Instrument moderner Innovation, FAZ Verlag, Frankfurt a. M., 2001, ISBN 978-3929368277

Skripte werden beim Start-up Meeting ausgegeben.

The scripts will be supplied in the start-up meeting.

V

Project Workshop: Automotive Engineering

Lecture (V)
On-Site

2115817, SS 2025, 3 SWS, Language: German, Open in study portal

Content
During the Project Workshop Automotive Engineering a team of six persons will work on a task given by an German industrial partner using the instruments of project management. The task is relevant for the actual business and the results are intended to be industrialized after the completion of the project workshop.

The team will generate approaches in its own responsibility and will develop solutions for practical application. Coaching will be supplied by both, company and institute.

At the beginning in a start-up meeting goals and structure of the project will be specified. During the project workshop there will be weekly team meetings. Also a milestone meeting will be held together with persons from the industrial company. In a final presentation the project results will be presented to the company management and to institute representatives.

Learning Objectives:

The students are familiar with typical industrial development processes and working style. They are able to apply knowledge gained at the university to a practical task. They are able to analyze and to judge complex relations. They are ready to work self-dependently, to apply different development methods and to work on approaches to solve a problem, to develop practice-oriented products or processes.

Organizational issues
Begrenzte Teilnehmerzahl mit Auswahlverfahren, die Bewerbungen sind am Ende des vorhergehenden Semesters einzureichen.

Raum und Termine: s. Aushang bzw. Homepage

Literature
Steinle, Claus; Bruch, Heike; Lawa, Dieter (Hrsg.), Projektmanagement, Instrument moderner Innovation, FAZ Verlag, Frankfurt a. M., 2001, ISBN 978-3929368277

Skripte werden beim Start-up Meeting ausgegeben.

T 3.454 Course: Public Law I & II [T-INFO-110300]

Responsible: TT-Prof. Dr. Frederike Zufall
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	6 CP	graded	Each summer term	1

Events					
WT 24/25	2424016	Öffentliches Recht I - Grundlagen	2 SWS	Lecture / 🗣	Zufall
ST 2025	24520	Öffentliches Recht II - Öffentliches Wirtschaftsrecht	2 SWS	Lecture / 🗣	Zufall
Exams					
WT 24/25	7500138	Public Law I & II			Zufall
ST 2025	7500298	Public Law I & II			Zufall

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

T 3.455 Course: Public Management [T-WIWI-102740]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2561127	Public Management	3 SWS	Lecture / Practice (/	Wigger
Exams					
WT 24/25	790puma	Public Management			Wigger
ST 2025	790puma	Public Management			Wigger

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1.5h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

Prerequisites
None

Recommendations
Basic knowledge of Public Finance is required.

Below you will find excerpts from events related to this course:

V Public Management

2561127, WS 24/25, 3 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
Blended (On-Site/Online)

Literature
Weiterführende Literatur:

- Damkowski, W. und C. Precht (1995): Public Management; Kohlhammer
- Richter, R. und E.G. Furubotn (2003): Neue Institutionenökonomik; 3. Auflage, Mohr
- Schedler, K. und I. Proeller (2003): New Public Management; 2. Auflage; UTB
- Mueller, D.C. (2009): Public Choice III; Cambridge University Press
- Wigger, B.U. (2006): Grundzüge der Finanzwissenschaft; 2. Auflage; Springer

T 3.456 Course: Public Media Law [T-INFO-101311]

Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	1

T 3.457 Course: Public Revenues [T-WIWI-102739]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2560120	Public Revenues	2 SWS	Lecture / 🗣	Wigger
ST 2025	2560121	Übung zu Öffentliche Einnahmen	1 SWS	Practice / 🗣	Wigger, Schmelzer
Exams					
WT 24/25	790oeff	Public Revenues			Wigger
ST 2025	790oeff	Public Revenues			Wigger

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

Prerequisites
None

Recommendations
Basic knowledge of Public Finance is required.

Below you will find excerpts from events related to this course:

V Public Revenues

2560120, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The *Public Revenues* lecture is concerned with the theory and policy of taxation and public dept. In the first chapter, fundamental concepts of taxation theory are introduced, whereas the second chapter deals with key elements of the German taxation system. The allocative and distributive effects of different taxation types are examined in chapter three and four. Chapter five integrates both allocative and distributive components in order to derive a theory of optimal taxation. The core of the sixth chapter is represented by international aspects of taxation. The debt part begins with a description of the extent and structure of public dept in chapter seven. In the following chapter, macroeconomic theories of national dept are evolved, while chapter nine is concerned with its long term consequences when employed as a regular instrument of budgeting. Finally, the tenth chapter deals with constitutional limits to public debt-incurring.

Learning goals:

See German version.

Workload:

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature
Literatur:

- Homburg, S.(2000): *Allgemeine Steuerlehre,* Vahlen
- Rosen, H.S.(1995): *Public Finance*; 4. Aufl., Irwin
- Wellisch, D.(2000): *Finanzwissenschaft I* und *Finanzwissenschaft III*, Vahlen
- Wigger, B. U.(2006): *Grundzüge der Finanzwissenschaft*; 2. Aufl., Springer

T 3.458 Course: Python Algorithms for Vehicle Technology [T-MACH-110796]

Responsible: Stephan Rhode
Organisation:
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2114862	Python Algorithms for Automotive Engineering	2 SWS	Lecture /	Rhode
Exams					
ST 2025	76-T-MACH-110796	Python Algorithm for Vehicle Technology			Rhode

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Assessment
Written Examination

Duration: 90 minutes

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from events related to this course:

V Python Algorithms for Automotive Engineering

2114862, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
Teaching content:

- Introduction to Python and useful tools and libraries for creating algorithms, graphical representation, optimization, symbolic arithmetic and machine learning
  - Anaconda, Pycharm, Jupyter
  - NumPy, Matplotlib, SymPy, Scikit-Learn
- Methods and tools for creating software
  - Version management GitHub, git
  - Testing software pytest, Pylint
  - Documentation Sphinx
  - Continuous Integration (CI) Travis CI
  - Workflows in Open Source and Inner Source, Kanban, Scrum
- Practical programming projects to:
  - Road sign recognition
  - Vehicle state estimation
  - Calibration of vehicle models by mathematical optimization
  - Data-based modelling of the powertrain of an electric vehicle

Objectives:

The students have an overview of the programming language Python and important Python libraries to solve automotive engineering problems with computer programs. The students know current tools around Python to create algorithms, to apply them and to interpret and visualize their results. Furthermore, the students know
basics in the creation of software to be used in later programming projects in order to develop high-quality software solutions in teamwork. Through practical programming projects (road sign recognition, vehicle state estimation, calibration, data-based modelling), the students can perform future complex tasks from the area of driver assistance systems.

Organizational issues
Die Vorlesung beginnt mit zwei Kick-Off Veranstaltung in Präsenz am 25.04. sowie am 09.05.2025 um 11:30 Uhr am Campus Ost, Geb.70.04, Raum 219. Die restlichen Termine finden überwiegend digital statt. Weitere Infos über ILIAS.

Literature

- A Whirlwind Tour of Python, Jake VanderPlas, Publisher: O'Reilly Media, Inc. Release Date: August 2016, ISBN: 9781492037859 link
- Scientific Computing with Python 3, Olivier Verdier, Jan Erik Solem, Claus Führer, Publisher: Packt Publishing, Release Date: December 2016, ISBN: 9781786463517 link
- Introduction to Machine Learning with Python, Sarah Guido, Andreas C. Müller, Publisher: O'Reilly Media, Inc., Release Date: October 2016, ISBN: 9781449369880, link
- Clean Code, Robert C. Martin, Publisher: Prentice Hall, Release Date: August 2008, ISBN: 9780136083238, link

T 3.459 Course: Quality Management [T-MACH-102107]

Responsible: Prof. Dr.-Ing. Gisela Lanza
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each winter term	3

Events					
WT 24/25	2149667	Quality Management	2 SWS	Lecture /	Lanza, Stamer
Exams					
WT 24/25	76-T-MACH-102107	Quality Management			Lanza
ST 2025	76-T-MACH-102107	Quality Management			Lanza

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written Exam (60 min)

Prerequisites
It is not possible to combine this brick with brick Quality Management [T-MACH-112586].

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from events related to this course:

V **Quality Management**
2149667, WS 24/25, 2 SWS, Language: German, Open in study portal
Lecture (V)
Blended (On-Site/Online)

Content
Based on the quality philosophies Total Quality Management (TQM) and Six Sigma, the lecture deals with the requirements of modern quality management. Within this context, the process concept of a modern enterprise and the process-specific fields of application of quality assurance methods are presented. The lecture covers the current state of the art in preventive and non-preventive quality management methods in addition to manufacturing metrology, statistical methods and service related quality management. The content is completed with the presentation of certification possibilities and legal quality aspects.

Main topics of the lecture:

- The term "Quality"
- Total Quality Management (TQM) and Six Sigma
- Universal methods and tools
- QM during early product stages – product denition
- QM during product development and in procurement
- QM in production – manufacturing metrology
- QM in production – statistical methods
- QM in service
- Quality management systems
- Legal aspects of QM

Learning Outcomes:

The students …

- are capable to comment on the content covered by the lecture.
- are capable of substantially quality philosophies.
- are able to apply the QM tools and methods they have learned about in the lecture to new problems from the context of the lecture.
- are able to analyze and evaluate the suitability of the methods, procedures and techniques they have learned about in the lecture for a specific problem.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Organizational issues
Vorlesungstermine montags 09:45 Uhr
Übung erfolgt während der Vorlesung

Literature
Medien:
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt:

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.460 Course: Quantitative Methods in Energy Economics [T-WIWI-107446]

Responsible: Patrick Plötz
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Oral examination	3,5 CP	graded	Each winter term	3

Events					
WT 24/25	2581007	Quantitative Methods in Energy Economics	2 SWS	Lecture / 🗣	Plötz
WT 24/25	2581008	Übungen zu Quantitative Methods in Energy Economics	1 SWS	Practice / 🗣	Plötz, Britto
Exams					
WT 24/25	7981007	Quantitative Methods in Energy Economics			Fichtner
ST 2025	7981007	Quantitative Methods in Energy Economics			Fichtner

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of an oral (app. 30 minutes) exam (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Recommendations
None

Below you will find excerpts from events related to this course:

V Quantitative Methods in Energy Economics

2581007, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Energy economics makes use of many quantitative methods in exploration and analysis of data as well as in simulations and modelling. This lecture course aims at introducing students of energy economics into the application of quantitative methods and techniques as taught in elementary courses to real problems in energy economics. The focus is mainly on regression, simulation, time series analysis and related statistical methods as applied in energy economics.

Learning Goals:

The student

- knows and understands selected quantitative methods of energy economics
- is able to use selected quantitative methods of energy economics
- understands they range of usage, limits and is autonomously able to adress new problems by them.

Literature
Wird in der Vorlesung bekannt gegeben.

T 3.461 Course: Quantum Functional Devices and Semiconductor Technology [T-ETIT-100740]

Responsible: Prof. Dr.-Ing. Christian Koos
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	3 CP	graded	Each summer term	1

Prerequisites
none

T 3.462 Course: Rail System Technology [T-MACH-102143]

Responsible: Prof. Dr.-Ing. Martin Cichon
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	9 CP	graded	Each term	6

Events					
WT 24/25	2115919	Rail System Technology	2 SWS	Lecture / 🗣	Cichon
WT 24/25	2115996	Rail Vehicle Technology	2 SWS	Lecture / 🗣	Cichon
ST 2025	2115919	Rail System Technology	2 SWS	Lecture / 🗣	Cichon
ST 2025	2115996	Rail Vehicle Technology	2 SWS	Lecture / 🗣	Cichon
Exams					
WT 24/25	76-T-MACH-102143	Rail System Technology			Cichon
ST 2025	76-T-MACH-102143	Rail System Technology			Cichon

Legend: 🖥 Online, Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
writen examination in German language
Duration. 120 minutes
No tools or reference materials may be used during the exam except calculator and dictionary

Prerequisites
none

Additional Information
The course is offered in German.

Workload
270 hours

Below you will find excerpts from events related to this course:

V Rail System Technology

2115919, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

1. Railway System: railway as system, subsystems and interdependencies, definitions, laws, rules, railway and environment, economic impact
2. Operation: Transportation, public transport, regional transport, long-distance transport, freight service, scheduling
3. Infrastructure: rail facilities, track alignment, railway stations, clearance diagram
4. Wheel-rail-contact: carrying of vehicle mass, adhesion, wheel guidance, current return
5. Vehicle dynamics: tractive and brake effort, driving resistance, inertial force, load cycles
6. Signaling and Control: operating procedure, succession of trains, European Train Control System, blocking period, automatic train control
7. Traction power supply: power supply of rail vehicles, comparison electric traction and diesel traction, dc and ac networks, system pantograph and contact wire, filling stations

Literature
Eine Literaturliste steht den Studierenden auf der Ilias-Plattform zum Download zur Verfügung.

A bibliography is available for download (Ilias-platform).

V Rail Vehicle Technology

2115996, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

1. Vehicle system technology: structure and main systems of rail vehicles
2. Car body: functions, requirements, design principles, crash elements, coupling, doors and windows
3. Bogies: forces, running gears, bogies, Jakobs-bogies, active components, connection to car body, wheel arrangement
4. Drives: priciples, electric drives (main components, asynchronous traction motor, inverter, with DC supply, with AC supply, without line supply, multisystem vehicles, dual mode vehicles, hybrid vehicles), non-electric drives
5. Brakes: basics, principles (wheel brakes, rail brakes, blending), brake control (requirements and operation modes, pneumatic brake, electropneumatic brake, emergency brake, parking brake)
6. Train control management system: definition of TCMS, bus systems, components, network architectures, examples, future trends
7. Vehicle concepts: trams, metros, regional trains, intercity trains, high speed trains, double deck vehicles, locomotives, freight wagons

Literature
Eine Literaturliste steht den Studierenden auf der Ilias-Plattform zum Download zur Verfügung.

A bibliography is available for download (Ilias-platform).

V Rail System Technology

2115919, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

1. Railway System: railway as system, subsystems and interdependencies, definitions, laws, rules, railway and environment, economic impact
2. Operation: Transportation, public transport, regional transport, long-distance transport, freight service, scheduling
3. Infrastructure: rail facilities, track alignment, railway stations, clearance diagram
4. Wheel-rail-contact: carrying of vehicle mass, adhesion, wheel guidance, current return
5. Vehicle dynamics: tractive and brake effort, driving resistance, inertial force, load cycles
6. Signaling and Control: operating procedure, succession of trains, European Train Control System, blocking period, automatic train control
7. Traction power supply: power supply of rail vehicles, comparison electric traction and diesel traction, dc and ac networks, system pantograph and contact wire, filling stations

Organizational issues
schriftliche Prüfung am 27.08.2025

Literature
Eine Literaturliste steht den Studierenden auf der Ilias-Plattform zum Download zur Verfügung.

A bibliography is available for download (Ilias-platform).

V Rail Vehicle Technology

2115996, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

1. Vehicle system technology: structure and main systems of rail vehicles
2. Car body: functions, requirements, design principles, crash elements, coupling, doors and windows
3. Bogies: forces, running gears, bogies, Jakobs-bogies, active components, connection to car body, wheel arrangement
4. Drives: priciples, electric drives (main components, asynchronous traction motor, inverter, with DC supply, with AC supply, without line supply, multisystem vehicles, dual mode vehicles, hybrid vehicles), non-electric drives
5. Brakes: basics, principles (wheel brakes, rail brakes, blending), brake control (requirements and operation modes, pneumatic brake, electropneumatic brake, emergency brake, parking brake)
6. Train control management system: definition of TCMS, bus systems, components, network architectures, examples, future trends
7. Vehicle concepts: trams, metros, regional trains, intercity trains, high speed trains, double deck vehicles, locomotives, freight wagons

Organizational issues
schriftliche Prüfung am 27.08.2025

Literature
Eine Literaturliste steht den Studierenden auf der Ilias-Plattform zum Download zur Verfügung.

A bibliography is available for download (Ilias-platform).

T 3.463 Course: Real Estate Economics and Sustainability Part 1: Basics and Valuation [T-WIWI-102838]

Responsible: Prof. Dr David Lorenz
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Assessment
The examination for the courses generally consist of a 60 minute written exam. A 20 minute oral exam is only offered after the second failure of the written exam. The exams for the respective parts (Part 1: Basics and Valuation and Part 2: Reporting and Rating) happen in the same semester in which the lectures take place.

Therefore, Part I currently only takes place in the winter semester and Part II takes place in the summer semester. In each semester there are two alternative dates for the exam and exams can be re-sat at any regular exam date.

Prerequisites
None

Recommendations
A combination with courses in the area of

- Finance
- Insurance
- Civil engineering and architecture

is recommended.

Particularly recommended is the successful completion of the following Bachelor-Modules:

- Real Estate Management I and II
- Design, Construction and Assessment of Green Buildings I and II

T 3.464 Course: Real Estate Economics and Sustainability Part 2: Reporting and Rating [T-WIWI-102839]

Responsible: Prof. Dr David Lorenz
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Assessment
It is currently unclear whether the course "Real Estate Economics and Sustainability Part 2: Reporting and Rating" can be offered in summer term 2018. It must therefore be expected that the corresponding module M-WIWI-101508 "Real Estate Management and Sustainability" can not be completed according to schedule.

The examination for the courses generally consist of a 60 minute written exam. A 20 minute oral exam is only offered after the second failure of the written exam. The exams for the respective parts (Part 1: Basics and Valuation and Part 2: Reporting and Rating) happen in the same semester in which the lectures take place.

Therefore, Part I currently only takes place in the winter semester and Part II takes place in the summer semester. In each semester there are two alternative dates for the exam and exams can be re-sat at any regular exam date.

Prerequisites
None

Recommendations
A combination with courses in the area of

- Finance
- Insurance
- Civil engineering and architecture

is recommended.

Particularly recommended is the successful completion of the following Bachelor-Modules:

- Real Estate Management I and II
- Design, Construction and Assessment of Green Buildings I and II

T 3.465 Course: Real Estate Management I [T-WIWI-102744]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Assessment
The examination offer has been discontinued. For all those who still have to complete the module examination with this exam, there is the last opportunity for an oral exam in WS 22/23. This must be arranged directly at the institute. If this is a repeat examination in which the first attempt was taken in writing, the approval of the examination board must be obtained in advance via the examination office.

Prerequisites
None

Additional Information
The course is replenished by excursions and guest lectures by practicioners out of the real estate business.

T 3.466 Course: Real Estate Management II [T-WIWI-102745]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Assessment
The examination offer has been discontinued. For all those who still have to complete the module examination with this exam, there is the last opportunity for an oral exam in WS 22/23. This must be arranged directly at the institute. If this is a repeat examination in which the first attempt was taken in writing, the approval of the examination board must be obtained in advance via the examination office.

Prerequisites
None

Recommendations
A combination with the module *Design Construction and Assessment of Green Buildings I* is recommended.

Furthermore it is recommeded to choose courses of the following fields

- Finance and Banking
- Insurance
- Civil Engineering and Architecture (building physics, structural design, facility management)

Additional Information
The course is replenished by excursions and guest lectures by practicioners out of the real estate business.

T 3.467 Course: Recommender Systems [T-WIWI-102847]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2540506	Recommender Systems	2 SWS	Lecture / 🗣	Geyer-Schulz
WT 24/25	2540507	Exercise Recommender Systems	1 SWS	Practice / 🗣	Geyer-Schulz, Nazemi
Exams					
WT 24/25	7900310	Recommender Systems (WS 2024/2025)			Geyer-Schulz
ST 2025	7900138	Recommender Systems			Geyer-Schulz

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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

Recommendations
None

Below you will find excerpts from events related to this course:

V Recommender Systems — **Lecture (V) On-Site**
2540506, WS 24/25, 2 SWS, Language: German, Open in study portal

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 excersise work will be added.

Grade: Minimum points

- 1,0: 95
- 1,3: 90
- 1,7: 85
- 2,0: 80
- 2,3: 75
- 2,7: 70
- 3,0: 65
- 3,3: 60
- 3,7: 55
- 4,0: 50
- 5,0: 0

Organizational issues
Geb. 10.11, Raum 223

Literature

Rakesh Agrawal, Tomasz Imielinski, and Arun Swami. Mining association rules between sets of items in large databases. In Sushil Jajodia Peter Buneman, editor, Proceedings of the ACM SIGMOD International Conference on Management of Data, volume 22, Washington, D.C., USA, Jun 1993. ACM, ACM Press.

Rakesh Agrawal and Ramakrishnan Srikant. Fast algorithms for mining association rules. In Proceedings of the 20th Very Large Databases Conference, Santiago, Chile, pages 487 – 499, Sep 1994.

Asim Ansari, Skander Essegaier, and Rajeev Kohli. Internet recommendation systems. Journal of Marketing Research, 37:363 – 375, Aug 2000.

Christopher Avery, Paul Resnick, and Richard Zweckhauser. The market for evaluations. American Economic Review, 89(3):564 – 584, 1999.

Ibrahim Cingil, Asuman Dogac, and Ayca Azgin. A Broader Approach to Personalization. Communications of the ACM, 43(8):136 – 141, Aug 2000.

Richard O. Duda, Peter E. Hart, and David G. Stork. Pattern Classification. Wiley-Interscience, New York, 2 edition, 2001.

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. A customer purchase incidence model applied to recommender services. In R. Kohavi et al., editor, Proceedings of the WebKDD 2001 – Mining log data across all customer touchpoints, volume 2356 of Lecture Notes in Artificial Intelligence LNAI, pages 25–47, Berlin, 2002. ACM, Springer-Verlag.

Jon M. Kleinberg. Authoritative sources in a hyperlinked environment. JACM, 46(5):604–632, sep 1999.

Joseph Konstan, Bradley Miller, David Maltz, Jonathan Herlocker, Lee Gordon, and John Riedl. Grouplens: Applying Collaborative Filtering to Usernet 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.

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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 3.468 Course: Regulation Theory and Practice [T-WIWI-102712]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Oral examination	4,5 CP	graded	see Annotations	2

Assessment
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

Recommendations
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.

Additional Information
The lecture is not offered for an indefinite period of time.

T 3.469 Course: Reinforcement Learning [T-INFO-111255]

Responsible: TT-Prof. Dr. Rudolf Lioutikov
Prof. Dr. Gerhard Neumann
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Written examination	6 CP	graded	Each winter term	2

Events					
WT 24/25	2400163	Reinforcement Learning		Lecture / Practice (/	Neumann, Lioutikov, Zhou
Exams					
WT 24/25	7500293	Reinforcement Learning			Neumann
ST 2025	7500221	Reinforcement Learning			Neumann

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The success control takes place in the form of a written exam, usually 90 minutes in length, according to § 4 Abs. 2 Nr. 1 SPO.

A bonus can be acquired through successful participation in the exercise as a success control of a different kind (§4(2), 3 SPO 2008) or study performance (§4(3) SPO 2015). The exact criteria for awarding a bonus will be announced at the beginning of the lecture. 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 bonus is only valid for the main and post exams of the semester in which it was earned. After that, the grade bonus expires.

Prerequisites
None.

Recommendations
• Students should be familiar with the content of the "Foundations of Artificial Intelligence" lecture.
• Good Python knowledge is required.
• Good mathematical background knowledge is required.

Below you will find excerpts from events related to this course:

V **Reinforcement Learning** — **Lecture / Practice (VÜ)**
2400163, WS 24/25, SWS, Language: English, Open in study portal — **On-Site**

Content
Reinforcement Learning (RL) is a sub-field of machine learning in which an artificial agent has to interact with its environment and learn how to improve its behaviour by trial and error. For doing so, the agent is provided with an evaluative feedback signal, called reward, that he perceives for each action performed in its environment. RL is one of the hardest machine learning problems, as, in contrast to standard supervised learning, we do not know the targets (i.e. the optimal actions) for our inputs (i.e. the state of the environment) and we also need to consider the long-term effects of the agent's actions on the state of the environment. Due to recent successes, RL has gained a lot of popularity with applications in robotics, automation, health care, trading and finance, natural language processing, autonomous driving and computer games. This lecture will introduce the concepts and theory of RL and review current state of the art methods with a particular focus on RL applications in robotics. An exemplary list of topics is given below:

- Primer in Machine Learning and Deep Learning
- Supervised Learning of Behaviour
- Introduction in Reinforcement Learning
- Dynamic Programming
- Value Based Methods
- Policy Optimization and Trust Regions
- Episodic Reinforcement Learning and Skill Learning
- Bayesian Optimization
- Variational Inference, Max-Entropy RL and Versatility
- Model-based Reinforcement Learning
- Offline Reinforcement Learning
- Inverse Reinforcement Learning
- Hierarchical Reinforcement Learning
- Exploration and Artificial Curiosity
- Meta Reinforcement Learning

Lernziele:

- Students are able to understand the RL problem and challenges.

- Students can differentiate between different RL algorithm and understand their underlying theory

- Students will know the mathematical tools necessary to understand RL algorithms

- Students can implement RL algorithms for various tasks

- Students understand current research questions in RL

Empfehlungen:

- Der Vorlesungsinhalt von Maschinelles Lernen – Grundverfahren wird vorausgesetzt
- Gute Python Kenntnisse erforderlich
- Gute mathematische Grundkenntnisse

Erfolgskontrolle: Siehe Modulhandbuch!

Arbeitsaufwand:

180h, aufgeteilt in:

- ca 45h Vorlesungsbesuch
- ca 15h Übungsbesuch
- ca 90h Nachbearbeitung und Bearbeitung der Übungsblätter

ca 30h Prüfungsvorbereitung

Organizational issues
6 ECTS

Vorlesungs-und Übungsturnus: Siehe ILIAS

T 3.470 Course: Remote Sensing, Exam [T-BGU-101636]

Responsible: Prof. Dr. Jan Cermak
Prof. Dr.-Ing. Stefan Hinz
Dr.-Ing. Uwe Weidner

Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Events					
ST 2025	6020241	Remote Sensing Systems	1 SWS	Lecture / 🗣	Hinz, Cermak
ST 2025	6020242	Remote Sensing Systems, Excercise	1 SWS	Practice / 🗣	Bork-Unkelbach
ST 2025	6020243	Procedures of Remote Sensing	2 SWS	Lecture / 🗣	Weidner
ST 2025	6020244	Procedures of Remote Sensing, Excercise	1 SWS	Practice / 🗣	Weidner
Exams					
WT 24/25	8284101636	Remote Sensing, exam			Hinz, Weidner, Pauli
ST 2025	8284101636	Remote Sensing, exam			Weidner, Hinz

Legend: 🖥 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-BGU-101637 - Systems of Remote Sensing, Prerequisite must have been passed.
2. The course T-BGU-101638 - Procedures of Remote Sensing, Prerequisite must have been passed.

Recommendations
None

Workload
120 hours

T 3.471 Course: Renewable Energy-Resources, Technologies and Economics [T-WIWI-100806]

Responsible: Prof. Dr. Patrick Jochem
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each winter term	8

Events					
WT 24/25	2581012	Renewable Energy – Resources, Technologies and Economics	2 SWS	Lecture / 🗣	Jochem
Exams					
WT 24/25	7981012	Renewable Energy-Resources, Technologies and Economics			Fichtner
ST 2025	7981012	Renewable Energy-Resources, Technologies and Economics			Fichtner

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written exam (60 minutes, in English, answers are possible in German or English) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

Prerequisites
None.

Below you will find excerpts from events related to this course:

V Renewable Energy – Resources, Technologies and Economics

2581012, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
1. General introduction: Motivation, Global situation
2. Basics of renewable energies: Energy balance of the earth, potential definition
3. Hydro
4. Wind
5. Solar
6. Biomass
7. Geothermal
8. Other renewable energies
9. Promotion of renewable energies
10. Interactions in systemic context
11. Excursion to the "Energieberg" in Mühlburg

Learning Goals:

The student

- understands the motivation and the global context of renewable energy resources.
- gains detailed knowledge about the different renewable resources and technologies as well as their potentials.
- understands the systemic context and interactions resulting from the increased share of renewable power generation.
- understands the important economic aspects of renewable energies, including electricity generation costs, political promotion and marketing of renewable electricity.
- is able to characterize and where required calculate these technologies.

Organizational issues
Blockveranstaltung, freitags 14:00-17:00 Uhr, 25.10., 08.11., 22.11., 06.12., 20.12., 17.01., 31.01. 14.02.

Literature
Weiterführende Literatur:

- Kaltschmitt, M., 2006, Erneuerbare Energien : Systemtechnik, Wirtschaftlichkeit, Umweltaspekte, aktualisierte, korrigierte und ergänzte Auflage Berlin, Heidelberg : Springer-Verlag Berlin Heidelberg.
- Kaltschmitt, M., Streicher, W., Wiese, A. (eds.), 2007, Renewable Energy: Technology, Economics and Environment, Springer, Heidelberg.
- Quaschning, V., 2010, Erneuerbare Energien und Klimaschutz : Hintergründe - Techniken - Anlagenplanung – Wirtschaftlichkeit München : Hanser, Ill.2., aktualis. Aufl.
- Harvey, D., 2010, Energy and the New Reality 2: Carbon-Free Energy Supply, Eathscan, London/Washington.
- Boyle, G. (ed.), 2004, Renewable Energy: Power for a Sustainable Future, 2nd Edition, Open University Press, Oxford.

T 3.472 Course: Requirements Engineering [T-INFO-101300]

Responsible: Prof. Dr.-Ing. Anne Koziolek
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each summer term	2

Recommendations
Das Modul Softwaretechnik II wird empfohlen.

T 3.473 Course: Responsible Artificial Intelligence [T-WIWI-111385]

Responsible: Dr. Rainer Hoffmann
Prof. Dr. Jella Pfeiffer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2545164	Responsible Artificial Intelligence	2 SWS	Lecture / 🗣	Hoffmann, Miskiw
WT 24/25	2545165	Responsible Artificial Intelligence	1 SWS	Practice / 🗣	Hoffmann, Miskiw
Exams					
WT 24/25	7900290	Responsible Artificial Intelligence			Weinhardt

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
The final grade is based on an examination of other type according to § 4 Par. 2 No. 3. It consists of

- The completion of an exercise including a short presentation (15 min)(max. 30 points)
- Oral exam (max. 60 points).

Further details are explained during the lecture.

Prerequisites
Prior to the start of the lecture, introductory materials will be provided for self-study. The lecture has a limitation of participants. Therefore, prior registration via the Wiwi-Portal is mandatory.

Additional Information
Can a technology really be trustworthy or even responsible? Since the success of LLMs at the latest, this question has been increasingly asked in society. With the increasing use of artificial intelligence, terms such as "Trustworthy AI", "Responsible AI" or "Ethical AI" are therefore gaining in importance. But what exactly is behind them? Technology is only ever used by people for specific purposes. So if we want to "trust" an AI solution, we need to understand how the people and organizations involved develop AI responsibly. According to the European Commission's HLEG AI, trustworthy AI must be lawful, ethical and robust.

This lecture sheds light on all these areas and thus provides an answer to the question of what a responsible and thus sustainable approach to AI can look like. After an introduction to AI and data, various approaches will be discussed with which actions and technology applications can be morally evaluated. The aim of this ethical reflection is to find out what we should do with AI instead of limiting ourselves to what we can do with AI.

In the context of robustness, vulnerabilities of AI and measures to address them will be discussed. The lecture will cover other topics such as bias, adversarial attacks, transparency, privacy and human-computer interaction. Current developments in regulatory requirements at European level will also be discussed. Guest lectures and continuous insights into business practice complement the foundations laid.

After successfully completing the course, students should be able

- to classify and evaluate the scientific discussion on ethics in artificial intelligence systems,
- understand the concept of trust and responsibility in the context of artificial intelligence and apply the relevant knowledge to change processes in companies,
- shape the social and entrepreneurial discussion on the use of AI themselves and
- know the legal requirements for AI and implement them in the corporate context.

Workload
135 hours

T 3.474 Course: Risk Communication [T-WIWI-102649]

Responsible: Prof. Dr. Ute Werner
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Oral examination	4,5 CP	graded	Each winter term	1

Assessment
The assessment consists of oral presentations (incl. papers) within the lecture (according to Section 4 (2), 3 of the examination regulation) and a final oral exam (30 min.) according to Section 4 (2), 2 of the examination regulation.

The overall grade consists of the assessment of the oral presentations incl. papers (50 percent) and the assessment of the oral exam (50 percent).

Prerequisites
None

Recommendations
None

T 3.475 Course: Risk Management in Industrial Supply Networks [T-WIWI-102826]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each winter term	1

Events					
WT 24/25	2581992	Risk Management in Industrial Supply Networks	2 SWS	Lecture / 🗣	Schultmann, Rosenberg
Exams					
WT 24/25	7981992	Risk Management in Industrial Supply Networks			Schultmann
ST 2025	7981992	Risk Management in Industrial Supply Networks			Schultmann

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
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.

Prerequisites
None

Recommendations
None

Below you will find excerpts from events related to this course:

V Risk Management in Industrial Supply Networks

2581992, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Students learn methods and tools to manage risks in complex and dynamically evolving supply chain networks. In the first part of the lectures, students are introduced to the key terms and concepts of risk management and decision theory for industrial application. Based on the theoretic prerequisites, students are able to determine and analyze risk diversification, risk pooling and insurance mechanisms in supply chain network management. Lastly the lectures cover the differences and connection between risk management and resilience in industrial networks.

Literature
Wird in der Veranstaltung bekannt gegeben.

T 3.476 Course: Safety Engineering [T-MACH-105171]

Responsible: Hans-Peter Kany
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	2

Events					
WT 24/25	2117061	Safety Engineering	2 SWS	Lecture / 🗣	Kany
Exams					
WT 24/25	76-T-MACH-105171	Safety Engineering			Furmans

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of an oral exam (20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Prerequisites
none

Workload
120 hours

Below you will find excerpts from events related to this course:

V Safety Engineering

2117061, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Media
Presentations

Learning content
The course provides basic knowledge of safety engineering. In particular the basics of health at the working place, job safety in Germany, national and European safety rules and the basics of safe machine design are covered. The implementation of these aspects will be illustrated by examples of material handling and storage technology. This course focuses on: basics of safety at work, safety regulations, basic safety principles of machine design, protection devices, system security with risk analysis, electronics in safety engineering, safety engineering for storage and material handling technique, electrical dangers and ergonomics. So, mainly, the technical measures of risk reduction in specific technical circumstances are covered.

Learning goals
The students are able to:

- Name and describe relevant safety concepts of safety engineering,
- Discuss basics of health at work and labour protection in Germany,
- Evaluate the basics for the safe methods of design of machinery with the national and European safety regulations and
- Realize these objectives by using examples in the field of storage and material handling systems.

Recommendations
None

Workload
Regular attendance: 21 hours
Self-study: 99 hours

Organizational issues
Termine: siehe ILIAS.

Literature
Defren/Wickert: Sicherheit für den Maschinen- und Anlagenbau, Druckerei und
Verlag: H. von Ameln, Ratingen

T 3.477 Course: Safety Management in Highway Engineering [T-BGU-101674]

Responsible: Dr.-Ing. Matthias Zimmermann
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each term	1 terms	1

Events					
ST 2025	6233906	Safety Management in Highway Engineering	2 SWS	Lecture / Practice (/	Zimmermann

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Assessment
oral exam with 15 minutes

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.478 Course: Selected Applications of Technical Logistics [T-MACH-102160]

Responsible: Viktor Milushev
Dr.-Ing. Martin Mittwollen

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Assessment
The assessment consists of an oral exam (20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Prerequisites
none

Recommendations
Knowledge out of Basics of Technical Logistics I (T-MACH-109919) / Elements and Systems of Technical Logistics (T-MACH-102159) preconditioned.

Workload
120 hours

T 3.479 Course: Selected Applications of Technical Logistics - Project [T-MACH-108945]

Responsible: Viktor Milushev
Dr.-Ing. Martin Mittwollen

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	2 CP	graded	Each summer term	1

Assessment
presentation of performed project and defense (30min) according to $4 (2), No. 3 of the examination regulation

Prerequisites
T-MACH-102160 (selected applications of technical logistics) must have been started

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-MACH-102160 - Selected Applications of Technical Logistics must have been started.

Recommendations
Knowledge out of Basics of Technical Logistics I (T-MACH-109919) / Elements and Systems of Technical Logistics (T-MACH-102159) preconditioned.

Workload
60 hours

T 3.480 Course: Selected Legal Issues of Internet Law [T-INFO-108462]

Responsible: N.N.
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each summer term	1

Events					
ST 2025	24821	Selected legal issues of Internet law	2 SWS	Colloquium (K / 🗣)	Sattler
Exams					
ST 2025	7500099	Selected Legal Issues of Internet Law			Sattler

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment is carried out as an examination of another type (§ 4 Abs. 2 No. 3 SPO).

The overall impression is evaluated. The following partial aspects are included in the grading: oral presentation and discussion.

Prerequisites
The course **Internet Law T-INFO-101307** must not have started.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-INFO-101307 - Internet Law must not have been started.

Recommendations
Keine.

Additional Information
Lecture (with written exam) **Internet Law** T-INFO-101307 is offered in the winter semester.

Colloquium (other type of examination) **Selected Legal Issues of Internet Law** T-INFO-108462 offered in the summer semester

T 3.481 Course: Self-Booking-HOC-SPZ-FORUM-STK-Graded [T-WIWI-113353]

Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104910 - Interdisciplinary Qualifications

Type	Credits	Grading	Version
Examination of another type	2 CP	graded	1

Self Service Assignment of Supplementary Studies
This course can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.482 Course: Self-Booking-HOC-SPZ-FORUM-STK-Graded [T-WIWI-113354]

Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104910 - Interdisciplinary Qualifications

Type	Credits	Grading	Version
Examination of another type	3 CP	graded	1

Self Service Assignment of Supplementary Studies
This course can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.483 Course: Self-Booking-HOC-SPZ-FORUM-STK-Graded [T-WIWI-111438]

Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104910 - Interdisciplinary Qualifications

Type	Credits	Grading	Version
Examination of another type	1 CP	graded	2

Self Service Assignment of Supplementary Studies
This course can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.484 Course: Self-Booking-HOC-SPZ-FORUM-STK-Graded [T-WIWI-111440]

Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104910 - Interdisciplinary Qualifications

Type	Credits	Grading	Version
Examination of another type	3 CP	graded	2

Self Service Assignment of Supplementary Studies
This course can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.485 Course: Self-Booking-HOC-SPZ-FORUM-STK-Graded [T-WIWI-111439]

Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104910 - Interdisciplinary Qualifications

Type	Credits	Grading	Version
Examination of another type	2 CP	graded	2

Self Service Assignment of Supplementary Studies
This course can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.486 Course: Self-Booking-HOC-SPZ-FORUM-STK-Graded [T-WIWI-113352]

Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104910 - Interdisciplinary Qualifications

Type	Credits	Grading	Version
Examination of another type	1 CP	graded	1

Self Service Assignment of Supplementary Studies
This course can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.487 Course: Self-Booking-HOC-SPZ-FORUM-STK-Ungraded [T-WIWI-113357]

Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104910 - Interdisciplinary Qualifications

Type	Credits	Grading	Version
Coursework	3 CP	pass/fail	1

Self Service Assignment of Supplementary Studies
This course can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.488 Course: Self-Booking-HOC-SPZ-FORUM-STK-Ungraded [T-WIWI-111441]

Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104910 - Interdisciplinary Qualifications

Type	Credits	Grading	Version
Coursework	1 CP	pass/fail	1

Self Service Assignment of Supplementary Studies
This course can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.489 Course: Self-Booking-HOC-SPZ-FORUM-STK-Ungraded [T-WIWI-111443]

Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104910 - Interdisciplinary Qualifications

Type	Credits	Grading	Version
Coursework	3 CP	pass/fail	1

Self Service Assignment of Supplementary Studies
This course can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.490 Course: Self-Booking-HOC-SPZ-FORUM-STK-Ungraded [T-WIWI-113355]

Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104910 - Interdisciplinary Qualifications

Type	Credits	Grading	Version
Coursework	1 CP	pass/fail	1

Self Service Assignment of Supplementary Studies
This course can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.491 Course: Self-Booking-HOC-SPZ-FORUM-STK-Ungraded [T-WIWI-113356]

Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104910 - Interdisciplinary Qualifications

Type	Credits	Grading	Version
Coursework	2 CP	pass/fail	1

Self Service Assignment of Supplementary Studies
This course can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.492 Course: Self-Booking-HOC-SPZ-FORUM-STK-Ungraded [T-WIWI-111442]

Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104910 - Interdisciplinary Qualifications

Type	Credits	Grading	Version
Coursework	2 CP	pass/fail	1

Self Service Assignment of Supplementary Studies
This course can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.493 Course: Semantic Web Technologies [T-WIWI-110848]

Responsible: Dr.-Ing. Tobias Käfer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2511310	Semantic Web Technologies	2 SWS	Lecture / 🗣	Käfer, Braun, Kinder, Kubelka
ST 2025	2511311	Exercises to Semantic Web Technologies	1 SWS	Practice / 🗣	Käfer, Braun, Kinder
Exams					
WT 24/25	79AIFB_SWebT_A2	Semantic Web Technologies			Käfer
ST 2025	79AIFB_SWebT_A4	Semantic Web Technologies (Registration until 21.07.2025)			Käfer

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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

Recommendations
Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required.

Below you will find excerpts from events related to this course:

V Semantic Web Technologies

2511310, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The aim of the Semantic Web is to make the meaning (semantics) of data on the web usable in intelligent systems, e.g. in e-commerce and internet portals

Central concepts are the representation of knowledge in form of RDF and ontologies, the access via Linked Data, as well as querying the data by using SPARQL. This lecture provides the foundations of knowledge representation and processing for the corresponding technologies and presents example applications.

The following topics are covered:

- Resource Description Framework (RDF) and RDF Schema (RDFS)
- Web Architecture and Linked Data
- Web Ontology Language (OWL)
- Query language SPARQL
- Rule languages
- Applications

Learning objectives:

The student

- understands the motivation and foundational ideas behind Semantic Web and Linked Data technologies, and is able to analyse and realise systems
- demonstrates basic competency in the areas of data and system integration on the web
- masters advanced knowledge representation scenarios involving ontologies

Recommendations:

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required. Knowledge of modeling with UML is required.

Workload:

- The total workload for this course is approximately 135 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 60 hours
- Exam and exam preperation: 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.

V **Exercises to Semantic Web Technologies** **Practice (Ü) On-Site**
2511311, SS 2025, 1 SWS, Language: English, Open in study portal

Content
The exercises are related to the lecture Semantic Web Technologies.

Multiple exercises are held that capture the topics, held in the lecture Semantic Web Technologies, and discuss them in detail. Thereby, practical examples are given to the students in order to transfer theoretical aspects into practical implementation.

The following topics are covered:

- Resource Description Framework (RDF) and RDF Schema (RDFS)
- Web Architecture and Linked Data
- Web Ontology Language (OWL)
- Query language SPARQL
- Rule languages
- Applications

Learning objectives:

The student

- understands the motivation and foundational ideas behind Semantic Web and Linked Data technologies, and is able to analyse and realise systems
- demonstrates basic competency in the areas of data and system integration on the web
- masters advanced knowledge representation scenarios involving ontologies

Recommendations:

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required. Knowledge of modeling with UML is required.

Organizational issues
Die Übungen finden im Rahmen der Termine der Blockvorlesung statt.

Literature

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web – Grundlagen. Springer, 2008.
- John Domingue, Dieter Fensel, James A. Hendler (Editors). Handbook of Semantic Web Technologies. Springer, 2011.

Weitere Literatur

- S. Staab, R. Studer (Editors). Handbook on Ontologies. International Handbooks in Information Systems. Springer, 2003.
- Tim Berners-Lee. Weaving the Web. Harper, 1999 geb. 2000 Taschenbuch.
- Ian Jacobs, Norman Walsh. Architecture of the World Wide Web, Volume One. W3C Recommendation 15 December 2004. http://www.w3.org/TR/webarch/
- Dean Allemang. Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL. Morgan Kaufmann, 2008.
- Tom Heath and Chris Bizer. Linked Data: Evolving the Web into a Global Data Space. Synthesis Lectures on the Semantic Web: Theory and Technology, 2011.

T 3.494 Course: Seminar Creating a Patent Specification [T-ETIT-100754]

Responsible: Prof. Dr. Wilhelm Stork
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework	3 CP	pass/fail	Each summer term	1

Events					
ST 2025	2311633	Seminar Creating a Patent Specification	2 SWS	Seminar / 🗣	Stork

Legend: 💻 Online, 🎛 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
none

T 3.495 Course: Seminar Data-Mining in Production [T-MACH-108737]

Responsible: Prof. Dr.-Ing. Gisela Lanza
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each winter term	2

Events					
WT 24/25	2151643	Seminar Data Mining in Production	2 SWS	Seminar /	Lanza
Exams					
WT 24/25	76-T-MACH-108737	Seminar Data-Mining in Production			Lanza

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
alternative test achievement (graded):

- written elaboration (workload of at least 80 h)
- oral presentation (approx. 30 min)

Prerequisites
none

Additional Information
The course is offered in German.

The number of students is limited to twelve. Dates and deadlines for the seminar will be announced at https://www.wbk.kit.edu/studium-und-lehre.php.

Workload
90 hours

Below you will find excerpts from events related to this course:

V Seminar Data Mining in Production

2151643, WS 24/25, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content
In the age of Industry 4.0, large amounts of production data are generated by the global production networks and value chains. Their analysis enables valuable conclusions about production and lead to an increasing process efficiency. The aim of the seminar is to get to know production data analysis as an important component of future industrial projects. The students get to know the data mining tool KNIME and use it for analyses. A specific industrial use case with real production data enables practical work and offers direct references to industrial applications. The participants learn selected methods of data mining and apply them to the production data. The work within the seminar takes place in small groups on the computer. Subsequently, presentations on specific data mining methods have to be prepared.

Learning Outcomes:
The students …

- can name, describe and distinguish between different methods, procedures and techniques of production data analysis.
- can perform basic data analyses with the data mining tool KNIME.
- can analyze and evaluate the results of data analyses in the production environment.
- are able to derive suitable recommendations for action.
- are able to explain and apply the CRISP-DM model.

Workload:
regular attendance: 10 hours
self-study: 80 hours

Organizational issues
Die Teilnehmerzahl ist auf zwölf Studierende begrenzt. Termine und Fristen zur Veranstaltung werden unter https://www.wbk.kit.edu/studium-und-lehre.php bekanntgegeben.

The number of students is limited to twelve. Dates and deadlines for the seminar will be announced at https://www.wbk.kit.edu/studium-und-lehre.php.

Literature
Medien:
KNIME Analytics Platform

Media:
KNIME Analytics Platform

T 3.496 Course: Seminar in Business Administration (Bachelor) [T-WIWI-103486]

Responsible: Professorenschaft des Fachbereichs Betriebswirtschaftslehre
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	00063	Seminar Social Sentiment in Times of Crises	2 SWS	Seminar	Fegert
WT 24/25	2500006	Digital Citizen Science	2 SWS	Seminar / 🗣	Greif-Winzrieth
WT 24/25	2500045	Digital Democracy - Challenges and Opportunities of the Digital Society	2 SWS	Seminar / 🧩	Fegert, Stein, Bezzaoui
WT 24/25	2500061	Special Topics in Transportation Strategy	2 SWS	Seminar / 🗣	Müller
WT 24/25	2500125	Human-Centered Systems Seminar: Engineering	2 SWS	Seminar / 🧩	Mädche
WT 24/25	2500165	Student2Startup	2 SWS	Seminar / 🧩	Böhrer, Mohammadi
WT 24/25	2500215	Entrepreneurship Seasonal School	2 SWS	Block / 🗣	Weimar, Martjan
WT 24/25	2530580	Seminar in Finance (Bachelor)	2 SWS	Seminar / 🗣	Uhrig-Homburg
WT 24/25	2530586			Seminar / 🗣	Uhrig-Homburg, Molnar
WT 24/25	2540473	Business Data Analytics	2 SWS	Seminar / 🗣	Grote, Schulz, Motz
WT 24/25	2540475	Positive Information Systems	2 SWS	Seminar / 🗣	Knierim, del Puppo
WT 24/25	2540478	Smart Grids and Energy Markets	2 SWS	Seminar / 🗣	Weinhardt, Semmelmann, Miskiw
WT 24/25	2540524	Bachelor Seminar in Data Science and Machine Learning	2 SWS	Seminar	Geyer-Schulz, Nazemi
WT 24/25	2540557	Human-Centered Systems Seminar: Research	2 SWS	Seminar / 🧩	Mädche
WT 24/25	2545010	Entrepreneurship Basics (Track 1)	2 SWS	Seminar / 🧩	Hirte
WT 24/25	2545011	Entrepreneurship Basics (Track 2)	2 SWS	Seminar / 🧩	Wohlfeil, Wohlfeil
WT 24/25	2571180	Seminar in Marketing and Sales (Bachelor)	2 SWS	Seminar / 🗣	Klarmann, Mitarbeiter
WT 24/25	2573010	Seminar: Human Resources and Organizations (Bachelor)	2 SWS	Seminar / 🗣	Nieken, Mitarbeiter
WT 24/25	2573011	Seminar: Human Resource Management (Bachelor)	2 SWS	Seminar / 🗣	Nieken, Mitarbeiter
WT 24/25	2579919	Seminar Management Accounting - Sustainability Topics	2 SWS	Seminar / 🗣	Wouters, Dickemann
WT 24/25	2581030	Seminar in Energy Economics	2 SWS	Seminar / 🗣	Fichtner, Sloot
WT 24/25	2581976	Seminar in Production and Operations Management I	2 SWS	Seminar / 🗣	Schultmann, Rudi
WT 24/25	2581977	Seminar in Production and Operations Management II	2 SWS	Seminar / 🗣	Volk, Schultmann
WT 24/25	2581978	Seminar in Production and Operations Management	2 SWS	Seminar / 🗣	Schultmann, Rosenberg
WT 24/25	2581979	Seminar in Energy Economics	2 SWS	Seminar / 🗣	Fichtner, Kleinebrahm
WT 24/25	2581980	Seminar in Energy Economics	2 SWS	Seminar / 🗣	Fichtner, Sandmeier
WT 24/25	2581981	Seminar in Energy Economics	2 SWS	Seminar / 🗣	Ardone, Fichtner, Slednev
ST 2025	00063	Seminar Social Sentiment in Times of Crises	2 SWS	Seminar	Fegert

ST 2025	2500020	Digital Democracy - Challenges and opportunities of the digital society	2 SWS	Seminar /	Fegert
ST 2025	2500056	ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems	2 SWS	Seminar /	Mädche
ST 2025	2500061	Special Topics in Transportation Strategy	2 SWS	Seminar /	Müller
ST 2025	2500125	Human-Centered Systems Seminar: Engineering	3 SWS	Seminar /	Mädche
ST 2025	2530293	Seminar in Finance (Bachelor, Prof. Ruckes)	2 SWS	Seminar /	Ruckes, Luedecke, Benz, Kohl, Sarac, Fkyerat
ST 2025	2540468	Bachelor Seminar: AI-Driven Information Systems	2 SWS	Seminar /	Pfeiffer, Bennardo
ST 2025	2540473	Business Data Analytics	2 SWS	Seminar	Hariharan
ST 2025	2540475	Positive Information Systems	2 SWS	Seminar	Knierim
ST 2025	2540478	Smart Grid Economics & Energy Markets	2 SWS	Seminar	Weinhardt
ST 2025	2540524	Bachelor Seminar in Data Science and Machine Learning	2 SWS	Seminar	Geyer-Schulz
ST 2025	2540553	User-Adaptive Systems Seminar	2 SWS	Seminar /	Mädche, Beigl
ST 2025	2540557	Human-Centered Systems Seminar: Research	3 SWS	Seminar /	Mädche
ST 2025	2545010	Entrepreneurship Basics (Track 1)	2 SWS	Seminar /	Hirte, Terzidis
ST 2025	2545011	Entrepreneurship Basics (Track 2)	2 SWS	Seminar /	Wohlfeil, Terzidis, Wohlfeil
ST 2025	2571187	Seminar Digital Marketing (Bachelor)	2 SWS	Seminar /	Kupfer
ST 2025	2573010	Seminar Human Resources and Organizations (Bachelor)	2 SWS	Seminar /	Nieken, Mitarbeiter, Walther
ST 2025	2573011	Seminar Human Resource Management (Bachelor)	2 SWS	Seminar /	Nieken, Mitarbeiter, Gorny
ST 2025	2579919	Seminar Management Accounting - Sustainability Topics	2 SWS	Seminar /	Letmathe
ST 2025	2581030	Seminar Energiewirtschaft IV	2 SWS	Seminar /	Fichtner, Sloot
ST 2025	2581031	Seminar Energiewirtschaft V	2 SWS	Seminar /	Plötz
ST 2025	2581032	Seminar Energiewirtschaft VI	2 SWS	Seminar /	Slednev, Fichtner
ST 2025	2581976	Seminar Produktionswirtschaft und Logistik I	2 SWS	Seminar /	Schultmann, Rudi
ST 2025	2581977	Seminar Produktionswirtschaft und Logistik II	2 SWS	Seminar /	Schultmann
ST 2025	2581979	Seminar Energiewirtschaft I	2 SWS	Seminar /	Fichtner, Kleinebrahm
ST 2025	2581981	Seminar Energiewirtschaft III	2 SWS	Seminar /	Ardone, Fichtner
Exams					
WT 24/25	00064	Seminar Social Sentiment in Times of Crises			Weinhardt
WT 24/25	00072	Seminar Positive Information Systems			Weinhardt
WT 24/25	00074	Seminar Business Data Analytics			Weinhardt
WT 24/25	7900017	Seminar Smart Grid and Energy Markets			Weinhardt
WT 24/25	7900069	Human-Centered Systems Seminar: Engineering			Mädche
WT 24/25	7900085	Entrepreneurship Basics (Track 1)			Terzidis
WT 24/25	7900087	Entrepreneurship Basics (Track 2)			Terzidis
WT 24/25	7900129	Special Topics in Transportation Strategy			Lindstädt
WT 24/25	7900138	Seminar in Marketing and Sales (Bachelor)			Klarmann
WT 24/25	7900146	Entrepreneurship Seasonal School			Terzidis
WT 24/25	7900157	Seminar Human Resources and Organizations (Bachelor)			Nieken
WT 24/25	7900161	Seminar Human Resource Management (Bachelor)			Nieken
WT 24/25	7900168	Bachelor Seminar in Data Science and Machine Learning			Geyer-Schulz

WT 24/25	7900175	Seminar in Finance: How Retail Investors Influence Stock Markets - The Game Stop Case	Uhrig-Homburg
WT 24/25	7900203	Seminar "Finance in a nutshell"	Uhrig-Homburg
WT 24/25	7900233	Human-Centered Systems Seminar: Research	Mädche
WT 24/25	7900309	Student2Startup	Terzidis
WT 24/25	7900335	Seminar Energy Economics IV	Fichtner
WT 24/25	79-2579919-B	Seminar Management Accounting - Sustainability Topics (Bachelor)	Wouters
WT 24/25	7981976	Seminar in Production and Operations Management I	Schultmann
WT 24/25	7981977	Seminar in Production and Operations Management II	Schultmann
WT 24/25	7981978	Seminar in Production and Operations Management III	Schultmann
WT 24/25	7981979	Seminar Energy Economics I	Fichtner
WT 24/25	7981980	Seminar Energy Economics II	Fichtner
WT 24/25	7981981	Seminar Energy Economics III	Fichtner
ST 2025	00064	Seminar Social Sentiment in Times of Crises	Weinhardt
ST 2025	7900003	Seminar in Finance (Bachelor, Prof. Ruckes)	Ruckes
ST 2025	7900013	Bachelor Seminar in Data Science and Machine Learning	Geyer-Schulz
ST 2025	7900056	Entrepreneurship Basics (Track 1)	Terzidis
ST 2025	7900057	Entrepreneurship Basics (Track 2)	Terzidis
ST 2025	7900093	Seminar Smart Grid and Energy Markets	Weinhardt
ST 2025	7900100	Seminar Human Resource Management (Bachelor)	Nieken
ST 2025	7900190	Human-Centered Systems Seminar: Engineering	Mädche
ST 2025	7900214	Seminar Business Data Analytics	Weinhardt
ST 2025	7900230	Seminar Human Resources and Organizations (Bachelor)	Nieken
ST 2025	7900243	Seminar Digital Marketing (Bachelor)	Kupfer
ST 2025	7900256	Seminar Positive Information Systems	Weinhardt
ST 2025	7900261	Human-Centered Systems Seminar: Research	Mädche
ST 2025	7900265	User-Adaptive Systems Seminar	Mädche
ST 2025	7900326	Seminar Energy Economics VI	Fichtner
ST 2025	7900327	Special Topics in Transportation Strategy	Lindstädt
ST 2025	7900365	Market Design (BA)	Puppe
ST 2025	7900370	ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems	Mädche
ST 2025	79-2579919-B	Seminar Management Accounting - Sustainability Topics (Bachelor)	Wouters
ST 2025	792581030	Seminar Energy Economics IV	Fichtner
ST 2025	792581031	Seminar Energy Economics V	Plötz
ST 2025	7940468	Bachelor Seminar: AI-Driven Information Systems [SS252540468]	Pfeiffer
ST 2025	7981976	Seminar in Production and Operations Management I	Schultmann
ST 2025	7981977	Seminar in Production and Operations Management II	Schultmann
ST 2025	7981979	Seminar Energy Economics I	Fichtner
ST 2025	7981981	Seminar Energy Economics III	Fichtner

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Student2Startup** — **Seminar (S)**
2500165, WS 24/25, 2 SWS, Language: English, Open in study portal — **Blended (On-Site/Online)**

Content
Content:

In this seminar, five pre-seed startup projects will define strategic challenges and ask students to work on solutions. Mentors from the industry will support the teams. In addition to a kick-off and final event, we will organize regular seminar sessions to provide background and help the student teams in their tasks.

Learning Objectives:

After completing this course, the course participants will be able to

- Understand and apply basic concepts of entrepreneurship, including business modeling, lean startup approaches, and market analysis
- Work in a team, organize the division of labor into separate tasks, and coordinate the tasks to attain a result
- Understand specific challenges of startup projects
- Interact with experts from the industry and potential users to develop answers/solutions to a given challenge
- Present the results to the startups and experts from the industry

Exam:

Team presentation at the final event, detailed presentation appendix with background information, and active participation in all sessions

Target group:

Bachelor students

Organizational issues
Registration is via the Wiwi-Portal.

In the seminar, you will work on a project in teams of max five people. The groups are formed in the seminar.

V **Entrepreneurship Seasonal School** — **Block (B)**
2500215, WS 24/25, 2 SWS, Language: English, Open in study portal — **On-Site**

Content
During the Entrepreneurship Seasonal School, students develop a business model based on innovative technologies and social problems in workshops in international teams for one week.

Course Content:

The Entrepreneurship Seasonal School brings together students from different universities to spend a week strengthening their knowledge of digital entrepreneurship in healthcare. Experience the life of an entrepreneur and learn how to attain resources to realize a product vision. During one week, you will develop a range of entrepreneurial competences crucial for establishing a successful venture. Our primary focus is on digital healthcare ventures, granting you the opportunity to delve into the realm of entrepreneurship within the healthcare system. By gaining a deep understanding of healthcare needs, you will utilize creativity techniques to uncover potential business ideas that provide value for patients and doctors. Additionally, you will learn how to create viable business models, dive into health regulations, and pitch your idea to a jury.

In WS 2023/24 the one-week program is being hosted by the Karlsruhe Institute of Technology, with co-teaching support from the Eucor partners University of Basel and the University of Strasbourg.

In the seminar you will work on a project in teams of max. 5 persons.

Learning Objectives:

After attending the event, you will be able to...

- describe the role of entrepreneurship
- develop innovative and technology-based solutions for societal problems,
- develop a viable business model for a problem,
- present a business idea to a panel of judges,
- and be empowered to work independently in multidisciplinary and multicultural teams

Organizational issues
Expected date: 17.02.25 – 21.02.25, Details will be announced later. Registration via wiwi portal.

V

2530586, WS 24/25, SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content
Within this seminar eLearning videos are produced to different topics out of the contents of our lectures. The student gets in touch with scientific work. Through profound working on a specific scientific topic the student is meant to learn the foundations of scientific research and reasoning in particular in finance.Through conduction of the video the student becomes familiar with the fundamental techniques for presentations and foundations of scientific reasoning. In addition, the student earns rhetorical skills.

The success is monitored by the development of an eLearning video and by the writing of a project report (according to §4(2), 3 SPO).

The overall grade is made up of these partial performances.

Recommendations:

Knowledge of the content of the modules *Essentials of Finance* [WW3BWLFBV1] (for bachelor students) and *F1 (Finance)* [WW4BWLFBV1] (for master students) is assumed.

The total workload for this course is approximately 90 hours. For further information see German version.

Organizational issues
Kickoff am 21.10.24 um 16 Uhr, Zwischenpräsentation am 10.12.24, 16 Uhr und Abschlusspräsentation am 21.01.25, 17:45 Uhr am Campus B (Geb. 09.21), Raum 209

V

Business Data Analytics
2540473, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Seminar (S)
On-Site

Content
wird auf deutsch und englisch gehalten

Organizational issues
Blockveranstaltung, siehe WWW

V

Bachelor Seminar in Data Science and Machine Learning
2540524, WS 24/25, 2 SWS, Language: German, Open in study portal

Seminar (S)

Literature
Weiterführende Literatur:

- W. Thomson. A Guide for the Young Economist. The MIT Press, 2001
- D.J. Brauner, H.-U. Vollmer. Erfolgreiches wissenschaftliches Arbeiten. Verlag Wissenschaft & Praxis, 2004
- University of Chicago Press. The Chicago Manual of Style. University of Chicago Press, 13th ed., 1982
- American Psychological Association. Concise of Rules of APA Style. American Psychological Association, 2005
- American Psychological Association. Publication Manual of the American Psychological Association. American Psychological Association, 2001

V

Entrepreneurship Basics (Track 1)

2545010, WS 24/25, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Course Content:

This seminar explains important factors for becoming an entrepreneur and guides you through a structured process from the first business idea to a pitch of your final business model. Therefore, a business idea will be developed in the context of the UN Sustainable Development Goals. In small teams you create, develop, validate and present your business model. It simulates the basics of a start-up process up to the investor pitch.

Learning Objectives

After completing this course, the course participants will be able to

- Reflect on and define your personal and team core values
- Reflect on and define your personal and team competencies
- Reflect on and recall a definition for business opportunity
- Define your field of interest for opportunity recognition using the UN SDGs
- Analyze a specific domain to identify business opportunities
- Develop a first draft for your business model by using the Business Model Canvas
- Pitch / present your business idea

Credentials:

Registration is via the Wiwi portal.

Exam:

Presentation + active participation + paper.

Target group:

Bachelor students

Organizational issues
Registration is via the Wiwi portal.

In the seminar you will work on a project in teams of max. 5 persons. The groups are formed in the seminar

V

Entrepreneurship Basics (Track 2)

2545011, WS 24/25, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Course Content:

The seminar introduces the basics of planning and modeling of business ideas. Based on a structured process, you will be guided through the development of your own business ideas, the derivation and testing of initial business model hypotheses, and the final creation of a business plan. In small teams you will create, develop, validate and present your business model. The basic steps of a start-up process are simulated.

Learning Objectives

After completing this seminar, students will have learned and actually practiced the whole business model development process. In particular this means that students will know:

- how business ideas are created and how they can be developed
- what the value proposition of a business idea is
- how a business model hypothesis can be generated and tested
- which successful business model patterns exist and how they can be used for one's own business
- how to pitch business ideas and convince potential investors

Credentials:

Registration is via the Wiwi portal.

Exam:

Presentation + active participation + paper.

Target group:

Bachelor students

Organizational issues
Registration is via the Wiwi portal.

In the seminar you will work on a project in teams of 4-5 persons. The groups are formed in the seminar.

V **Seminar: Human Resources and Organizations (Bachelor)** **Seminar (S) On-Site**
2573010, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The topics are redefined each semester on basis of current research topics.The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Blockveranstaltung siehe Homepage

V **Seminar: Human Resource Management (Bachelor)** **Seminar (S) On-Site**
2573011, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Blockveranstaltung siehe Homepage

V Seminar Management Accounting - Sustainability Topics

2579919, WS 24/25, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively prediscibed. The seminar course is concentrated in several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources.

Examination:

- The performance review is carried out in the form of a “Prüfungsleistung anderer Art” (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade is made up of the grade of the seminar paper, the presentation and the contributions in the seminar sessions.

Required prior Courses:

- The course requires a basic knowledge of finance and accounting.

Workload:

- The total workload for this course is approximately 90 hours. For further information see German version.

Note:

- Maximum of 8 students.

Organizational issues
Ort und Zeit werden noch bekannt gegeben bzw. über ILIAS

Literature
Will be announced in the course.

V ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems

2500056, SS 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content

Background: In the ABBA Summer School Seminar hosted at the Karlsruhe Decision & Design Lab (KD²Lab) at KIT, we aim to enable students to explore biosignal sensors for designing user-adaptive systems, focusing on gaze-adaptive systems. This comprehensive block seminar is intended for both bachelor's and master's students who want to gain an understanding of biosignal and the development of user-adaptive systems. The learning objective is to design human-centered biosignal-adaptive systems to address user needs in learning scenarios.

Course Content: Throughout the summer school, students will learn the foundations of biosignal-adaptive systems through an introductory lecture and apply the knowledge in practical group work. For the group work, we offer students the concept of designing a gaze-adaptive tutor for immersive learning. Aiming to address user challenges in this context, we provide eye-tracking data and an existing gaze-adaptive VR learning application in the kick-off event. The students will have one week to work in groups to understand the task and existing resources, before returning one week later to attend the three-day group work sessions. During the three-day seminar, we encourage students to integrate GenAI technologies for their design and implementation. In the end, students should present their results to showcase the functionality, innovation, and prototype of their gaze-adaptive tutoring systems.

Learning Outcome: By successfully achieving the learning objective, students will receive a certificate from KIT and will have the opportunity to apply their acquired skills and knowledge for further research.

Organization: The seminar will be held **with a one-day kick-off event (with an introduction lecture, 16th July) and one week later a three-day block-seminar format (21st - 23rd July)** at KD²Lab (Etage 1, Fritz-Erler-Straße 1-3, 76131 Karlsruhe) with 3 ECTS. For any questions, please ask Luke Shi Liu (shi.liu@kit.edu) for more information!

V **Human-Centered Systems Seminar: Engineering** — **Seminar (S)** **Blended (On-Site/Online)**

2500125, SS 2025, 3 SWS, Language: English, Open in study portal

Content

Formerly known as "Current Topics in Digital Transformation"

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the human-centered systems lab (Prof. Mädche). Students will work on a dedicated topic in the context of human-centered systems and apply a pre-defined research method. A broad spectrum of topics is offered every semester, topics may range from creating an experimental design, analyzing collected data, or systematically comparing existing software prototypes in a specific field of interest.

V **Bachelor Seminar: AI-Driven Information Systems** — **Seminar (S)** **On-Site**

2540468, SS 2025, 2 SWS, Language: English, Open in study portal

Content

This bachelor seminar explores information systems that leverage AI algorithms from multiple perspectives: While some topics examine these systems from a managerial viewpoint, others take a design-oriented approach. For example, one topic explores how sensor data can enhance system intelligence to assist consumers during their purchasing decisions. Another investigates how collaboration in digital work is affected when intelligent assistance systems serve as fully virtual advisors. Additionally, some topics are situated in virtual reality, reflecting one of the key research areas of our research group.

This seminar is offered by the newly established Information Systems III research group headed by Prof. Dr. Jella Pfeiffer at the Institute for Information Systems (WIN). To learn more about us, please visit our website (WIN - Information Systems III).

V **User-Adaptive Systems Seminar** — **Seminar (S)** **Blended (On-Site/Online)**

2540553, SS 2025, 2 SWS, Language: English, Open in study portal

Content
User-adaptive systems collect and analyze biosignals from users to recognize user states as a basis for adaptation. Thermic, mechanical, electric, acoustic, and optical signals are collected using sensors which are integrated in wearables, e.g. glasses, earphones, belts, or bracelets. The collected data is processed with analytics and machine learning techniques in order to determine short-term, evolving over time, and long-term user states in the form of user characteristics, affective-cognitive states, or behavior. Finally, the recognized user states are leveraged for realizing user-centric adaptations.

In this seminar, interdisciplinary teams of students design, develop, and evaluate a user-adaptive system prototype leveraging state-of-the-art hard- and software. This seminar follows an interdisciplinary approach. Students from the fields of computer science, information systems and industrial engineering & management collaborate in the prototype design, development, and evaluation.

The seminar is carried out in cooperation between Teco/Chair of Pervasive Computing Systems (Prof. Beigl) and the Institute of Information Systems and Marketing (h-lab, Prof. Mädche). It is offered as part of the DFG-funded graduate school “KD2School: Designing Adaptive Systems for Economic Decisions“ (https://kd2school.info/)

Learning objectives of the seminar

- Explain what a user-adaptive system is and how it can be conceptualized
- Suggest and evaluate different design solutions for addressing the identified problem
- Build a user-adaptive system prototype using state-of-the-art hard- and software
- Perform a user-centric evaluation of the user-adaptive system prototype

Prerequisites

Strong analytical abilities and profound software development skills are required.

Organizational issues
Termine werden bekannt gegeben

Literature
Required literature will be made available in the seminar.

V **Human-Centered Systems Seminar: Research** — **Seminar (S)**
2540557, SS 2025, 3 SWS, Language: English, Open in study portal — **Blended (On-Site/Online)**

Content
Formerly known as "Information Systems and Service Design Seminar"

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the research group IS I (Prof. Mädche). The research group “Information Systems I” (IS I) headed by Prof. Mädche focuses in research, education, and innovation on designing interactive intelligent systems. It is positioned at the intersection of Information Systems and Human-Computer Interaction (HCI).

In the seminar, participants will get deeper insights in a contemporary research topic in the field of information systems, specifically interactive intelligent systems.

The actual seminar topics will be derived from current research activities of the research group. Our research assistants offer a rich set of topics from our research clusters (digital experience and participation, intelligent enterprise systems, or digital services design & innovation). Students can select among these topics individually depending on their personal interests. The seminar is carried out in the form of a literature-based thesis project. In the seminar, students will acquire the important methodological skills of running a systematic literature review.

Learning Objectives

- focus on a contemporary topic at the intersection of Information Systems and Human-Computer Interaction (HCI), specifically interactive intelligent systems
- carry out a structured literature search for a given topic
- aggregate the collected information in a suitable way to present and extract knowledge
- write a seminar thesis following academic writing standards
- deliver a presentation in a scientific context in front of an auditorium

Prerequisites

No specific prerequisites are required for the seminar.

Literature

Further literature will be made available in the seminar.

Organizational issues
Termine werden bekannt gegeben

V

Entrepreneurship Basics (Track 1)

2545010, SS 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
Content

This seminar explains important factors for becoming an entrepreneur and guides you through a structured process from the first business idea to a pitch of your final business model. Therefore, a business idea will be developed in the context of the UN Sustainable Development Goals. In small teams you create, develop, validate and present your business model. It simulates the basics of a start-up process up to the investor pitch.

Learning Objectives

After completing this course, the course participants will be able to

- Reflect on and define your personal and team core values
- Reflect on and define your personal and team competencies
- Reflect on and recall a definition for business opportunity
- Define your field of interest for opportunity recognition using the UN SDGs
- Analyze a specific domain to identify business opportunities
- Develop a first draft for your business model by using the Business Model Canvas
- Pitch / present your business idea

Exam:

Presentation + active participation + paper.

Target group:

Bachelor students

Organizational issues
Registration is via the Wiwi-Portal.

In the seminar you will work on a project in teams of max. 5 persons. The groups are formed in the seminar.

V Entrepreneurship Basics (Track 2)

2545011, SS 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
Course Content:

This seminar shows what is important for entrepreneurs and it guides you through a structured process from the first business idea to a pitch of your final business model. In teams you create, develop, validate and present your business model. It partially simulates a start-up process up to the investor pitch.

Starting with a rough business idea, you learn to understand and validate the customer problems. Together with your teammates and the feedback from the other teams and the lecturer, you will create a sharp business model by using tools like the Value Proposition Canvas, the Business Model Canvas and customer interviews. With some further information about rapid prototyping and structuring a pitch and a one-pager for business angels, you will learn, how to present the developed business. This seminar is teamwork. You grow as a team, learn to communicate and to work efficient in a team so all your results (the pitch and the written outline) are presented by the team.

Learning Objectives

- Learning of entrepreneurial skills.
- Understanding of value creation importance.
- Experience on how to derive and test hypothesis.
- Transition from ideas to a business model that works.
- Leaning how to pitch and to convince investors.

Exam:

Presentation + active participation + paper.

Target group:

Bachelor students

Organizational issues
Registration is via the Wiwi-Portal.

In the seminar you will work on a project in teams of max. 5 persons. Team applications are welcome but not a prerequisite for participation.

V Seminar Human Resources and Organizations (Bachelor)

2573010, SS 2025, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

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

V Seminar Human Resource Management (Bachelor)

2573011, SS 2025, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

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

V

Seminar Management Accounting - Sustainability Topics

2579919, SS 2025, 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 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 is made up of the grade of the seminar paper, the presentation and the contributions in the seminar sessions.

Required prior Courses:

- The course requires a basic knowledge of finance and accounting.

Note:

- Maximum of 8 students.

Organizational issues
Geb.05.20, 2A-12.1; Termine werden bekannt gegeben

Literature
Will be announced in the course.

T 3.497 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	00063	Seminar Social Sentiment in Times of Crises	2 SWS	Seminar	Fegert
WT 24/25	2500006	Digital Citizen Science	2 SWS	Seminar /	Greif-Winzrieth
WT 24/25	2500043	Development of Sustainable Digital Business Models	2 SWS	Seminar /	Weissenberger-Eibl
WT 24/25	2500045	Digital Democracy - Challenges and Opportunities of the Digital Society	2 SWS	Seminar /	Fegert, Stein, Bezzaoui
WT 24/25	2500049	AI Innovation Ecosystems	2 SWS	Seminar /	Beyer, Weissenberger-Eibl
WT 24/25	2500125	Human-Centered Systems Seminar: Engineering	2 SWS	Seminar /	Mädche
WT 24/25	2530293		2 SWS	Seminar /	Ruckes, Benz, Luedecke, Kohl, Sarac
WT 24/25	2530586			Seminar /	Uhrig-Homburg, Molnar
WT 24/25	2540473	Business Data Analytics	2 SWS	Seminar /	Grote, Schulz, Motz
WT 24/25	2540475	Positive Information Systems	2 SWS	Seminar /	Knierim, del Puppo
WT 24/25	2540478	Smart Grids and Energy Markets	2 SWS	Seminar /	Weinhardt, Semmelmann, Miskiw
WT 24/25	2540510	Master Seminar in Data Science and Machine Learning	2 SWS	Seminar /	Geyer-Schulz, Nazemi
WT 24/25	2540557	Human-Centered Systems Seminar: Research	2 SWS	Seminar /	Mädche
WT 24/25	2545105	Case studies seminar: Innovation management	2 SWS	Seminar /	Weissenberger-Eibl
WT 24/25	2550493	Hospital Management	2 SWS	Block /	Hansis
WT 24/25	2571181	Seminar Digital Marketing (Master)	2 SWS	Seminar /	Kupfer
WT 24/25	2573012	Seminar Human Resource Management (Master)	2 SWS	Seminar /	Nieken, Mitarbeiter
WT 24/25	2573013	Seminar Human Resources and Organizations (Master)	2 SWS	Seminar /	Nieken, Mitarbeiter
WT 24/25	2579919	Seminar Management Accounting - Sustainability Topics	2 SWS	Seminar /	Wouters, Dickemann
WT 24/25	2581030	Seminar in Energy Economics	2 SWS	Seminar /	Fichtner, Sloot
WT 24/25	2581976	Seminar in Production and Operations Management I	2 SWS	Seminar /	Schultmann, Rudi
WT 24/25	2581977	Seminar in Production and Operations Management II	2 SWS	Seminar /	Volk, Schultmann
WT 24/25	2581978	Seminar in Production and Operations Management	2 SWS	Seminar /	Schultmann, Rosenberg
WT 24/25	2581979	Seminar in Energy Economics	2 SWS	Seminar /	Fichtner, Kleinebrahm
WT 24/25	2581980	Seminar in Energy Economics	2 SWS	Seminar /	Fichtner, Sandmeier
WT 24/25	2581981	Seminar in Energy Economics	2 SWS	Seminar /	Ardone, Fichtner, Slednev

ST 2025	00063	Seminar Social Sentiment in Times of Crises	2 SWS	Seminar	Fegert
ST 2025	2500018	Successful transformation through innovation	2 SWS	Seminar / 🗣	Busch
ST 2025	2500020	Digital Democracy - Challenges and opportunities of the digital society	2 SWS	Seminar / 🧩	Fegert
ST 2025	2500032	ERPSim Seminar	2 SWS	Seminar / 🧩	Mädche
ST 2025	2500056	ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems	2 SWS	Seminar / 🧩	Mädche
ST 2025	2500125	Human-Centered Systems Seminar: Engineering	3 SWS	Seminar / 🧩	Mädche
ST 2025	2530580	Seminar in Finance (Master)	2 SWS	Seminar / 🗣	Uhrig-Homburg, Müller, Thimme, Walter
ST 2025	2540469	Master Seminar: Trustworthy AI	2 SWS	Seminar / 🗣	Gutschow, Heßler
ST 2025	2540473	Business Data Analytics	2 SWS	Seminar	Hariharan
ST 2025	2540475	Positive Information Systems	2 SWS	Seminar	Knierim
ST 2025	2540478	Smart Grid Economics & Energy Markets	2 SWS	Seminar	Weinhardt
ST 2025	2540493	Data Science for Industrial Applications	2 SWS	Seminar / 🗣	Spitzer, Holstein, Hendriks
ST 2025	2540510	Master Seminar in Data Science and Machine Learning	2 SWS	Seminar	Geyer-Schulz
ST 2025	2540553	User-Adaptive Systems Seminar	2 SWS	Seminar / 🧩	Mädche, Beigl
ST 2025	2540557	Human-Centered Systems Seminar: Research	3 SWS	Seminar / 🧩	Mädche
ST 2025	2545002	Entrepreneurship Research	2 SWS	Seminar / 🗣	Malik
ST 2025	2550493	Hospital Management	2 SWS	Block / 📱	Hansis
ST 2025	2571180	Seminar in Marketing and Sales (Master)	2 SWS	Seminar / 🗣	Klarmann, Mitarbeiter
ST 2025	2571182	Seminar “The Future of Marketing” (Master)	2 SWS	Seminar / 🗣	Kupfer
ST 2025	2573012	Seminar Human Resource Management (Master)	2 SWS	Seminar / 🗣	Nieken, Mitarbeiter, Gorny
ST 2025	2573013	Seminar Human Resources and Organizations (Master)	2 SWS	Seminar / 🗣	Nieken, Mitarbeiter, Walther
ST 2025	2579919	Seminar Management Accounting - Sustainability Topics	2 SWS	Seminar / 🗣	Letmathe
ST 2025	2581030	Seminar Energiewirtschaft IV	2 SWS	Seminar / 🗣	Fichtner, Sloot
ST 2025	2581031	Seminar Energiewirtschaft V	2 SWS	Seminar / 🗣	Plötz
ST 2025	2581032	Seminar Energiewirtschaft VI	2 SWS	Seminar / 🗣	Slednev, Fichtner
ST 2025	2581976	Seminar Produktionswirtschaft und Logistik I	2 SWS	Seminar / 🗣	Schultmann, Rudi
ST 2025	2581977	Seminar Produktionswirtschaft und Logistik II	2 SWS	Seminar / 🗣	Schultmann
ST 2025	2581979	Seminar Energiewirtschaft I	2 SWS	Seminar / 🗣	Fichtner, Kleinebrahm
ST 2025	2581981	Seminar Energiewirtschaft III	2 SWS	Seminar / 🗣	Ardone, Fichtner
Exams					
WT 24/25	00064	Seminar Social Sentiment in Times of Crises			Weinhardt
WT 24/25	00072	Seminar Positive Information Systems			Weinhardt
WT 24/25	00074	Seminar Business Data Analytics			Weinhardt
WT 24/25	7900017	Seminar Smart Grid and Energy Markets			Weinhardt
WT 24/25	7900050	Development of Sustainable Business Models			Weissenberger-Eibl
WT 24/25	7900069	Human-Centered Systems Seminar: Engineering			Mädche
WT 24/25	7900106	Hospital Management			Hansis
WT 24/25	7900151	Master Seminar in Data Science and Machine Learning			Geyer-Schulz
WT 24/25	7900163	Seminar Human Resource Management (Master)			Nieken

WT 24/25	7900164	Seminar Human Resources and Organizations (Master)	Nieken
WT 24/25	7900184	Seminar in Finance (Master)	Ruckes
WT 24/25	7900203	Seminar "Finance in a nutshell"	Uhrig-Homburg
WT 24/25	7900233	Human-Centered Systems Seminar: Research	Mädche
WT 24/25	7900237	Case Studies Seminar: Innovation Management	Weissenberger-Eibl
WT 24/25	7900318	Bond Markets - Models & Derivatives	Uhrig-Homburg
WT 24/25	7900333	Seminar Digital Marketing (Master)	Kupfer
WT 24/25	7900335	Seminar Energy Economics IV	Fichtner
WT 24/25	7900344	Explainable AI in Computer Vision Applications: Reasoning the Segmentation	Satzger
WT 24/25	7900355	AI Innovation Ecosystems	Weissenberger-Eibl, Beyer
WT 24/25	7900364	Connecting the Challenges of Servitization with Circular Economy: A Literature Review	Satzger
WT 24/25	79-2579919-M	Seminar Management Accounting - Sustainability Topics (Master)	Wouters
WT 24/25	7981976	Seminar in Production and Operations Management I	Schultmann
WT 24/25	7981977	Seminar in Production and Operations Management II	Schultmann
WT 24/25	7981978	Seminar in Production and Operations Management III	Schultmann
WT 24/25	7981979	Seminar Energy Economics I	Fichtner
WT 24/25	7981980	Seminar Energy Economics II	Fichtner
WT 24/25	7981981	Seminar Energy Economics III	Fichtner
ST 2025	00064	Seminar Social Sentiment in Times of Crises	Weinhardt
ST 2025	7900008	Hospital Management	Hansis
ST 2025	7900019	Master Seminar in Data Science and Machine Learning	Geyer-Schulz
ST 2025	7900025	Successful Transformation Through Innovation	Busch
ST 2025	7900050	Language Models for Structured Literature Reviews	Satzger
ST 2025	7900052	Entrepreneurship Research	Terzidis
ST 2025	7900093	Seminar Smart Grid and Energy Markets	Weinhardt
ST 2025	7900101	Seminar Human Resource Management (Master)	Nieken
ST 2025	7900127	Seminar in Finance (Master)	Uhrig-Homburg
ST 2025	7900190	Human-Centered Systems Seminar: Engineering	Mädche
ST 2025	7900214	Seminar Business Data Analytics	Weinhardt
ST 2025	7900231	Seminar Human Resources and Organizations (Master)	Nieken
ST 2025	7900233	Seminar in Marketing and Sales (Master)	Klarmann
ST 2025	7900240	Seminar "The Future of Marketing" (Master)	Kupfer
ST 2025	7900256	Seminar Positive Information Systems	Weinhardt
ST 2025	7900261	Human-Centered Systems Seminar: Research	Mädche
ST 2025	7900265	User-Adaptive Systems Seminar	Mädche
ST 2025	7900318	Practical Seminar: Data Science for Industrial Applications	Satzger
ST 2025	7900319	Service Design Thinking	Satzger
ST 2025	7900320	Practical Seminar Service Innovation	Satzger
ST 2025	7900326	Seminar Energy Economics VI	Fichtner
ST 2025	7900364	Market Design (MA)	Puppe
ST 2025	7900370	ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems	Mädche
ST 2025	79-2579919-M	Seminar Management Accounting - Sustainability Topics (Master)	Wouters
ST 2025	792581030	Seminar Energy Economics IV	Fichtner
ST 2025	792581031	Seminar Energy Economics V	Plötz
ST 2025	7940469	Master Seminar: Trustworthy AI [SS252540469]	Pfeiffer
ST 2025	7981976	Seminar in Production and Operations Management I	Schultmann
ST 2025	7981977	Seminar in Production and Operations Management II	Schultmann
ST 2025	7981979	Seminar Energy Economics I	Fichtner
ST 2025	7981981	Seminar Energy Economics III	Fichtner

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Development of Sustainable Digital Business Models** **Seminar (S) On-Site**
2500043, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The topic of sustainability is becoming increasingly important for companies in Europe. For example, the demand for sustainable products has risen sharply in many sectors. More and more companies are obliged by guidelines and standards to report on the sustainability of their activities. At the same time, the digital transformation is progressing and offers companies opportunities to implement or communicate their plans digitally. The seminar examines how the topic of sustainability is anchored in the digital business modelling of companies.

Students first learn about the dimensions of business models and sustainability. The seminar then discusses various concepts from the literature that take sustainability into account in business modelling. Students develop their own approach to sustainable digital business modelling and apply it to selected company examples from different sectors. The results are 1) presented and discussed in presentations and 2) recorded in seminar papers.

V **AI Innovation Ecosystems** **Seminar (S) Online**
2500049, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Content
This research seminar uses the example of three innovation clusters in Baden-Württemberg to analyse innovation ecosystems and their potential special features in the field of artificial intelligence. The practical seminar benefits from expert input, but also places a clear focus on research methods and scientific work. A toolbox will be developed together, including literature reviews and interview techniques, which will later facilitate the work on the Master's thesis.
Firstly, the concept of innovation ecosystems is examined. Despite the frequently used term, the state of the art is still relatively open and an overview can be developed together. Then, using the example of the AI Health Innovation Cluster, a cluster is presented and its political history, structure and goal (achievement) are analysed. In the following two sessions, the IPAI and Cyber Valley will be analysed by experts and groups of students.
Since the students will be responsible for much of the seminar themselves, in addition to practical and methodological inputs, a preliminary meeting will take place on 31 October (6-7 pm) to allow sufficient preparation time. The seminar will take place virtually.

V **Seminar (S) On-Site**
2530586, WS 24/25, SWS, Language: German, Open in study portal

Content
Within this seminar eLearning videos are produced to different topics out of the contents of our lectures. The student gets in touch with scientific work. Through profound working on a specific scientific topic the student is meant to learn the foundations of scientific research and reasoning in particular in finance.Through conduction of the video the student becomes familiar with the fundamental techniques for presentations and foundations of scientific reasoning. In addition, the student earns rhetorical skills.

The success is monitored by the development of an eLearning video and by the writing of a project report (according to §4(2), 3 SPO).

The overall grade is made up of these partial performances.

Recommendations:

Knowledge of the content of the modules *Essentials of Finance* [WW3BWLFBV1] (for bachelor students) and *F1 (Finance)* [WW4BWLFBV1] (for master students) is assumed.

The total workload for this course is approximately 90 hours. For further information see German version.

Organizational issues
Kickoff am 21.10.24 um 16 Uhr, Zwischenpräsentation am 10.12.24, 16 Uhr und Abschlusspräsentation am 21.01.25, 17:45 Uhr am Campus B (Geb. 09.21), Raum 209

V **Business Data Analytics** — **Seminar (S)** **On-Site**
2540473, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Content
wird auf deutsch und englisch gehalten

Organizational issues
Blockveranstaltung, siehe WWW

V **Master Seminar in Data Science and Machine Learning** — **Seminar (S)** **Blended (On-Site/Online)**
2540510, WS 24/25, 2 SWS, Language: German, Open in study portal

V **Case studies seminar: Innovation management** — **Seminar (S)** **On-Site**
2545105, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The objective of the seminar is to master selected concepts and methods of innovation management and then to apply these practically. Working in groups, the students apply the described concepts and methods of innovation management to a case study from the industry to answer specific questions. Accordingly, the block seminar involves a switch from input to the application of this input. At the end, the results of the group work are presented in the form of a seminar paper and discussed by the whole course. A short introduction to presentation techniques is planned to help students prepare the seminar papers.

Literature
Werden in der ersten Veranstaltung bekannt gegeben.

V **Hospital Management** — **Block (B)** **Online**
2550493, WS 24/25, 2 SWS, Language: German, Open in study portal

V **Seminar Human Resource Management (Master)** — **Seminar (S)** **On-Site**
2573012, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Blockveranstaltung siehe Homepage

V **Seminar Human Resources and Organizations (Master)** **Seminar (S) On-Site**
2573013, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Blockveranstaltung siehe Homepage

V **Seminar Management Accounting - Sustainability Topics** **Seminar (S) On-Site**
2579919, WS 24/25, 2 SWS, Language: English, Open in study portal

Content
The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively prediscibed. The seminar course is concentrated in several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources.

Examination:

- The performance review is carried out in the form of a “Prüfungsleistung anderer Art” (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade is made up of the grade of the seminar paper, the presentation and the contributions in the seminar sessions.

Required prior Courses:

- The course requires a basic knowledge of finance and accounting.

Workload:

- The total workload for this course is approximately 90 hours. For further information see German version.

Note:

- Maximum of 8 students.

Organizational issues
Ort und Zeit werden noch bekannt gegeben bzw. über ILIAS

Literature
Will be announced in the course.

V Successful transformation through innovation
Seminar (S)
On-Site
2500018, SS 2025, 2 SWS, Language: German, Open in study portal

Content
This seminar uses strategic innovation management and concepts such as organizational ambidexterity, boundary spanning and stakeholder approaches to shed light on how companies can increase their innovative capacity through innovation. Students will use a core paper to understand the steps a company takes to become an innovative organization. The aim is to understand how medium-sized companies can develop into innovation-driven organizations in the context of organizational inertia and path dependency with the help of the aforementioned concepts. Part of the seminar will be to analyze the role of different stakeholders and how companies can become part of innovation ecosystems.

Based on the impulses and the core paper, students will apply the concepts they have learned to selected companies and present their results. These are also incorporated into academic seminar papers. As part of this work process, students deal independently with a current, research-oriented question and apply scientific criteria consistently. They research relevant information, analyze and abstract it critically and draw their own conclusions on this basis, reflecting their interdisciplinary knowledge and selectively developing current research findings.

The results obtained are systematically presented in written and oral form in compliance with academic standards - including structured presentation, correct specialist terminology and comprehensible references. In doing so, the students argue in a technically sound manner and are able to defend their positions in scientific discourse with experts. In addition, they are familiar with the DFG Code of Conduct “Guidelines for Safeguarding Good Scientific Practice” and successfully apply these guidelines in the preparation of their scientific work.

Organizational issues
Weblink: https://itm.entechnon.kit.edu/192_1281.php

V ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems
Seminar (S)
Blended (On-Site/Online)
2500056, SS 2025, 2 SWS, Language: English, Open in study portal

Content

Background: In the ABBA Summer School Seminar hosted at the Karlsruhe Decision & Design Lab (KD²Lab) at KIT, we aim to enable students to explore biosignal sensors for designing user-adaptive systems, focusing on gaze-adaptive systems. This comprehensive block seminar is intended for both bachelor's and master's students who want to gain an understanding of biosignal and the development of user-adaptive systems. The learning objective is to design human-centered biosignal-adaptive systems to address user needs in learning scenarios.

Course Content: Throughout the summer school, students will learn the foundations of biosignal-adaptive systems through an introductory lecture and apply the knowledge in practical group work. For the group work, we offer students the concept of designing a gaze-adaptive tutor for immersive learning. Aiming to address user challenges in this context, we provide eye-tracking data and an existing gaze-adaptive VR learning application in the kick-off event. The students will have one week to work in groups to understand the task and existing resources, before returning one week later to attend the three-day group work sessions. During the three-day seminar, we encourage students to integrate GenAI technologies for their design and implementation. In the end, students should present their results to showcase the functionality, innovation, and prototype of their gaze-adaptive tutoring systems.

Learning Outcome: By successfully achieving the learning objective, students will receive a certificate from KIT and will have the opportunity to apply their acquired skills and knowledge for further research.

Organization: The seminar will be held **with a one-day kick-off event (with an introduction lecture, 16th July) and one week later a three-day block-seminar format (21st - 23rd July)** at KD²Lab (Etage 1, Fritz-Erler-Straße 1-3, 76131 Karlsruhe) with 3 ECTS. For any questions, please ask Luke Shi Liu (shi.liu@kit.edu) for more information!

V **Human-Centered Systems Seminar: Engineering** — **Seminar (S)** **Blended (On-Site/Online)**
2500125, SS 2025, 3 SWS, Language: English, Open in study portal

Content

Formerly known as "Current Topics in Digital Transformation"

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the human-centered systems lab (Prof. Mädche). Students will work on a dedicated topic in the context of human-centered systems and apply a pre-defined research method. A broad spectrum of topics is offered every semester, topics may range from creating an experimental design, analyzing collected data, or systematically comparing existing software prototypes in a specific field of interest.

V **Master Seminar: Trustworthy AI** — **Seminar (S)** **On-Site**
2540469, SS 2025, 2 SWS, Language: English, Open in study portal

Content

Artificial Intelligence is shaping critical areas of society, but ensuring fairness, transparency, and trust remains a challenge. Our master seminar, "Trustworthy AI," explores key issues such as bias detection, intersectional fairness, and explainability in AI systems. We address bias in AI-driven decision-making, particularly in critical areas like credit scoring, which is classified as a high-risk application context by the AI Act, and examine methods to enhance fairness. A crucial focus is on developing transparent AI models and understanding how explanations influence trust in automated systems. Additionally, we analyze large language models, their limitations, and innovative retrieval methods such as GraphRAG, which enhance knowledge representation in AI.

This seminar is offered by the newly established Information Systems III research group headed by Prof. Dr. Jella Pfeiffer at the Institute for Information Systems (WIN). To learn more about us, please visit our website (WIN - Information Systems III).

V **Data Science for Industrial Applications** — **Seminar (S)** **On-Site**
2540493, SS 2025, 2 SWS, Language: English, Open in study portal

Content
Learning Objectives

This seminar will require you to screen, select, and apply information systems theories and methodologies to solve contemporary challenges in the manufacturing and adjacent industries. This will include both critical reviews of the literature state-of-the-art [1-2] as well as the systematic conduct of design science research and machine learning methods [3-4]. You will identify key problems in real-world use cases, derive relevant research questions, and systematically gather, choose, and apply academic knowledge to develop solutions in the form of proof-of-concepts or prototypes.

Course Credits

The seminar can be credited as Seminar Betriebswirtschaftslehre A [T-WIWI-103474], Seminar Betriebswirtschaftslehre B [T-WIWI-103476] or Seminar Wirtschaftsinformatik [T-WIWI-109827] (3 ECTS). Other courses may be credited upon request.

Seminar Description

The Internet of Things (IoT) is significantly transforming industries such as automotive, healthcare, and energy. With the rise of ubiquitous computing power, connectivity/internet access, and the economic application of sensors [5], physical products are providing vast amounts of data, enabling the development of smart services [6]. While such IoT use cases are projected to open a market potential valued at $3.3 billion in 2030 [7], the industry is still far from exploiting its full capabilities. To solve this challenge, cutting-edge academic knowledge in information systems and machine learning is key to generating valuable insights from machine data.

The seminar is held in cooperation with international industry partners, who provide real-world datasets and ongoing access to subject matter experts. Students will work in teams of 2-4 on different topics and datasets. The assignments will be handed out in a joint kick-off event – to be scheduled once participating students have been selected. Attendance at this kick-off event is mandatory and a prerequisite for participation. Students are required to submit a seminar paper of 12-15 pages on an individual basis.

Expertise in Python and Data Science / Machine Learning as well as successful participation in the course “Artificial Intelligence in Service Systems” (T-WIWI-108715) are strongly recommended.

Contact

Daniel Hendricks – daniel.hendriks@kit.edu

Philipp Spitzer - philipp.spitzer@kit.edu

Joshua Holstein – joshua.holstein@kit.edu

The practical seminar will be held in English. Application documents can be handed in in English or German.

[1] Webster, J., Watson, R. T. (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review. MIS Quarterly, 26 (2) xiii-xxiii.

[2] Brocke, J. v. et al. (2009), Reconstructing the Giant: On the Importance of Rigour in Documenting the Literature Search Process. *Proceedings of the European Conference on Information Systems*, paper 161.

[3] Wirth, R., Hipp, J. (2000). CRISP-DM: Towards a Standard Process Model for Data Mining. Proceedings of the 4th International Conference on the Practical Applications of Knowledge Discovery and Data Mining, 29-40.

[4] Peffers, K., Tuunanen, T., Rothenberger, M., Chatterjee, S. (2008). A Design Science Research Methodology for Information Systems Research. Journal of Management Information Systems, 24 (3) 45–78.

[5] Martin, D.; Kühl, N.; Satzger, G. (2021). Virtual Sensors. Business & Information Systems Engineering, 63 (3) 315-323.

[6] Hunke, F., Heinz, D. Satzger, G. (2022). Creating customer value from data: foundations and archetypes of analytics-based services. Electronic Markets, 32, 503–521.

[7] Chui, M., Collins, M., Patel, M. (2021). IoT value set to accelerate through 2030: Where and how to capture it. McKinsey & Company. URL: https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/iot-value-set-to-accelerate-through-2030-where-and-how-to-capture-it

V **Master Seminar in Data Science and Machine Learning** **Seminar (S)**
2540510, SS 2025, 2 SWS, Language: German/English, Open in study portal

V **User-Adaptive Systems Seminar** **Seminar (S)**
2540553, SS 2025, 2 SWS, Language: English, Open in study portal **Blended (On-Site/Online)**

Content
User-adaptive systems collect and analyze biosignals from users to recognize user states as a basis for adaptation. Thermic, mechanical, electric, acoustic, and optical signals are collected using sensors which are integrated in wearables, e.g. glasses, earphones, belts, or bracelets. The collected data is processed with analytics and machine learning techniques in order to determine short-term, evolving over time, and long-term user states in the form of user characteristics, affective-cognitive states, or behavior. Finally, the recognized user states are leveraged for realizing user-centric adaptations.

In this seminar, interdisciplinary teams of students design, develop, and evaluate a user-adaptive system prototype leveraging state-of-the-art hard- and software. This seminar follows an interdisciplinary approach. Students from the fields of computer science, information systems and industrial engineering & management collaborate in the prototype design, development, and evaluation.

The seminar is carried out in cooperation between Teco/Chair of Pervasive Computing Systems (Prof. Beigl) and the Institute of Information Systems and Marketing (h-lab, Prof. Mädche). It is offered as part of the DFG-funded graduate school “KD2School: Designing Adaptive Systems for Economic Decisions“ (https://kd2school.info/)

Learning objectives of the seminar

- Explain what a user-adaptive system is and how it can be conceptualized
- Suggest and evaluate different design solutions for addressing the identified problem
- Build a user-adaptive system prototype using state-of-the-art hard- and software
- Perform a user-centric evaluation of the user-adaptive system prototype

Prerequisites

Strong analytical abilities and profound software development skills are required.

Organizational issues
Termine werden bekannt gegeben

Literature
Required literature will be made available in the seminar.

V **Human-Centered Systems Seminar: Research** — **Seminar (S)**
2540557, SS 2025, 3 SWS, Language: English, Open in study portal — **Blended (On-Site/Online)**

Content
Formerly known as "Information Systems and Service Design Seminar"

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the research group IS I (Prof. Mädche). The research group “Information Systems I” (IS I) headed by Prof. Mädche focuses in research, education, and innovation on designing interactive intelligent systems. It is positioned at the intersection of Information Systems and Human-Computer Interaction (HCI).

In the seminar, participants will get deeper insights in a contemporary research topic in the field of information systems, specifically interactive intelligent systems.

The actual seminar topics will be derived from current research activities of the research group. Our research assistants offer a rich set of topics from our research clusters (digital experience and participation, intelligent enterprise systems, or digital services design & innovation). Students can select among these topics individually depending on their personal interests. The seminar is carried out in the form of a literature-based thesis project. In the seminar, students will acquire the important methodological skills of running a systematic literature review.

Learning Objectives

- focus on a contemporary topic at the intersection of Information Systems and Human-Computer Interaction (HCI), specifically interactive intelligent systems
- carry out a structured literature search for a given topic
- aggregate the collected information in a suitable way to present and extract knowledge
- write a seminar thesis following academic writing standards
- deliver a presentation in a scientific context in front of an auditorium

Prerequisites

No specific prerequisites are required for the seminar.

Literature

Further literature will be made available in the seminar.

Organizational issues
Termine werden bekannt gegeben

V **Entrepreneurship Research** **Seminar (S)**
2545002, SS 2025, 2 SWS, Language: English, Open in study portal **On-Site**

Content
Content

In this course, the students choose from various relevant and current research topics in entrepreneurship and independently develop a topic that suits them in small teams. Initially, there is an introduction to standard methods such as systematic literature review, design science, qualitative and quantitative data analysis, and more. The seminar topic must be scientifically prepared and presented in 15-20 pages as part of a written elaboration. The seminar results are presented in a block event at the end of the semester (20 min + 10 min open discussion).

Learning Objectives

The foundations of independent scholarly work (literature review, argumentation + discussion, citation of literature sources, application of qualitative, quantitative, and simulation methods) are developed as part of the written elaboration. The competencies acquired in the seminar can be utilized in preparing for a potential master's thesis. Therefore, the seminar is mainly aimed at students who intend to write their thesis at the Chair of Entrepreneurship and Technology Management and wish to gain substantial experience in entrepreneurship research.

Organizational issues
Thursday, 08.05.2025, 10.00-16.00
Thursday, 05.06.2025, 10.00-16.00
Thursday, 10.07.2025, 09.00-12.00

Registration is via the Wiwi-Portal.

Literature
Will be announced in the seminar.

V

Hospital Management

2550493, SS 2025, 2 SWS, Language: German, Open in study portal

Block (B)
Online

Content
The "Hospital Management" seminar is intended to help students in higher semesters to simulate some of the organizational and management tasks that arise in a medium-sized service company using a specific example (here: management of a medium-sized hospital). The seminar thus represents a kind of "bracket" for a large number of individual skills that the students have acquired during their studies. The seminar takes place as a webinar.

Students will be asked about the typical interaction of a medium-sized hospital with its environment in 5 thematic blocks: Interaction with the customer (patients) / Interaction with employees* / Interaction with business partners / Interaction with stakeholders / Summarizing opportunities and risks.

Organizational issues
Das Seminar wird als Blockveranstaltung stattfinden. Die Termine werden bei der Bewerbung über das Wiwi-Portal bekanntgegeben.

V

Seminar Human Resource Management (Master)

2573012, SS 2025, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

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

V

Seminar Human Resources and Organizations (Master)

2573013, SS 2025, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

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

V **Seminar Management Accounting - Sustainability Topics** **Seminar (S) On-Site**
2579919, SS 2025, 2 SWS, Language: English, Open in study portal

Content
The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively prediscibed. The seminar course is concentrated in several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources.

Workload:

- The total workload for this course is approximately 90 hours. For further information see German version.

Examination:

- The performance review is carried out in the form of a “Prüfungsleistung anderer Art” (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade is made up of the grade of the seminar paper, the presentation and the contributions in the seminar sessions.

Required prior Courses:

- The course requires a basic knowledge of finance and accounting.

Note:

- Maximum of 8 students.

Organizational issues
Geb.05.20, 2A-12.1; Termine werden bekannt gegeben

Literature
Will be announced in the course.

T 3.498 Course: Seminar in Business Administration B (Master) [T-WIWI-103476]

Responsible: Professorenschaft des Fachbereichs Betriebswirtschaftslehre
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	00063	Seminar Social Sentiment in Times of Crises	2 SWS	Seminar	Fegert
WT 24/25	2500006	Digital Citizen Science	2 SWS	Seminar / 🗣	Greif-Winzrieth
WT 24/25	2500043	Development of Sustainable Digital Business Models	2 SWS	Seminar / 🗣	Weissenberger-Eibl
WT 24/25	2500045	Digital Democracy - Challenges and Opportunities of the Digital Society	2 SWS	Seminar / 🧩	Fegert, Stein, Bezzaoui
WT 24/25	2500049	AI Innovation Ecosystems	2 SWS	Seminar / 💻	Beyer, Weissenberger-Eibl
WT 24/25	2500125	Human-Centered Systems Seminar: Engineering	2 SWS	Seminar / 🧩	Mädche
WT 24/25	2530293		2 SWS	Seminar / 💻	Ruckes, Benz, Luedecke, Kohl, Sarac
WT 24/25	2530586			Seminar / 🗣	Uhrig-Homburg, Molnar
WT 24/25	2540473	Business Data Analytics	2 SWS	Seminar / 🗣	Grote, Schulz, Motz
WT 24/25	2540475	Positive Information Systems	2 SWS	Seminar / 🗣	Knierim, del Puppo
WT 24/25	2540478	Smart Grids and Energy Markets	2 SWS	Seminar / 🗣	Weinhardt, Semmelmann, Miskiw
WT 24/25	2540510	Master Seminar in Data Science and Machine Learning	2 SWS	Seminar / 🧩	Geyer-Schulz, Nazemi
WT 24/25	2540557	Human-Centered Systems Seminar: Research	2 SWS	Seminar / 🧩	Mädche
WT 24/25	2545105	Case studies seminar: Innovation management	2 SWS	Seminar / 🗣	Weissenberger-Eibl
WT 24/25	2550493	Hospital Management	2 SWS	Block / 💻	Hansis
WT 24/25	2571181	Seminar Digital Marketing (Master)	2 SWS	Seminar / 🗣	Kupfer
WT 24/25	2573012	Seminar Human Resource Management (Master)	2 SWS	Seminar / 🗣	Nieken, Mitarbeiter
WT 24/25	2573013	Seminar Human Resources and Organizations (Master)	2 SWS	Seminar / 🗣	Nieken, Mitarbeiter
WT 24/25	2579919	Seminar Management Accounting - Sustainability Topics	2 SWS	Seminar / 🗣	Wouters, Dickemann
WT 24/25	2581030	Seminar in Energy Economics	2 SWS	Seminar / 🗣	Fichtner, Sloot
WT 24/25	2581976	Seminar in Production and Operations Management I	2 SWS	Seminar / 🗣	Schultmann, Rudi
WT 24/25	2581977	Seminar in Production and Operations Management II	2 SWS	Seminar / 🗣	Volk, Schultmann
WT 24/25	2581978	Seminar in Production and Operations Management	2 SWS	Seminar / 🗣	Schultmann, Rosenberg
WT 24/25	2581979	Seminar in Energy Economics	2 SWS	Seminar / 🗣	Fichtner, Kleinebrahm
WT 24/25	2581980	Seminar in Energy Economics	2 SWS	Seminar / 🗣	Fichtner, Sandmeier
WT 24/25	2581981	Seminar in Energy Economics	2 SWS	Seminar / 🗣	Ardone, Fichtner, Slednev

ST 2025	00063	Seminar Social Sentiment in Times of Crises	2 SWS	Seminar	Fegert
ST 2025	2500018	Successful transformation through innovation	2 SWS	Seminar / 🗣	Busch
ST 2025	2500020	Digital Democracy - Challenges and opportunities of the digital society	2 SWS	Seminar / 🧩	Fegert
ST 2025	2500032	ERPSim Seminar	2 SWS	Seminar / 🧩	Mädche
ST 2025	2500056	ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems	2 SWS	Seminar / 🧩	Mädche
ST 2025	2500125	Human-Centered Systems Seminar: Engineering	3 SWS	Seminar / 🧩	Mädche
ST 2025	2530580	Seminar in Finance (Master)	2 SWS	Seminar / 🗣	Uhrig-Homburg, Müller, Thimme, Walter
ST 2025	2540469	Master Seminar: Trustworthy AI	2 SWS	Seminar / 🗣	Gutschow, Heßler
ST 2025	2540473	Business Data Analytics	2 SWS	Seminar	Hariharan
ST 2025	2540475	Positive Information Systems	2 SWS	Seminar	Knierim
ST 2025	2540478	Smart Grid Economics & Energy Markets	2 SWS	Seminar	Weinhardt
ST 2025	2540493	Data Science for Industrial Applications	2 SWS	Seminar / 🗣	Spitzer, Holstein, Hendriks
ST 2025	2540510	Master Seminar in Data Science and Machine Learning	2 SWS	Seminar	Geyer-Schulz
ST 2025	2540553	User-Adaptive Systems Seminar	2 SWS	Seminar / 🧩	Mädche, Beigl
ST 2025	2540557	Human-Centered Systems Seminar: Research	3 SWS	Seminar / 🧩	Mädche
ST 2025	2545002	Entrepreneurship Research	2 SWS	Seminar / 🗣	Malik
ST 2025	2550493	Hospital Management	2 SWS	Block / 🖥	Hansis
ST 2025	2571180	Seminar in Marketing and Sales (Master)	2 SWS	Seminar / 🗣	Klarmann, Mitarbeiter
ST 2025	2571182	Seminar “The Future of Marketing” (Master)	2 SWS	Seminar / 🗣	Kupfer
ST 2025	2573012	Seminar Human Resource Management (Master)	2 SWS	Seminar / 🗣	Nieken, Mitarbeiter, Gorny
ST 2025	2573013	Seminar Human Resources and Organizations (Master)	2 SWS	Seminar / 🗣	Nieken, Mitarbeiter, Walther
ST 2025	2579919	Seminar Management Accounting - Sustainability Topics	2 SWS	Seminar / 🗣	Letmathe
ST 2025	2581030	Seminar Energiewirtschaft IV	2 SWS	Seminar / 🗣	Fichtner, Sloot
ST 2025	2581031	Seminar Energiewirtschaft V	2 SWS	Seminar / 🗣	Plötz
ST 2025	2581032	Seminar Energiewirtschaft VI	2 SWS	Seminar / 🗣	Slednev, Fichtner
ST 2025	2581976	Seminar Produktionswirtschaft und Logistik I	2 SWS	Seminar / 🗣	Schultmann, Rudi
ST 2025	2581977	Seminar Produktionswirtschaft und Logistik II	2 SWS	Seminar / 🗣	Schultmann
ST 2025	2581979	Seminar Energiewirtschaft I	2 SWS	Seminar / 🗣	Fichtner, Kleinebrahm
ST 2025	2581981	Seminar Energiewirtschaft III	2 SWS	Seminar / 🗣	Ardone, Fichtner
Exams					
WT 24/25	00064	Seminar Social Sentiment in Times of Crises			Weinhardt
WT 24/25	00072	Seminar Positive Information Systems			Weinhardt
WT 24/25	00074	Seminar Business Data Analytics			Weinhardt
WT 24/25	7900017	Seminar Smart Grid and Energy Markets			Weinhardt
WT 24/25	7900050	Development of Sustainable Business Models			Weissenberger-Eibl
WT 24/25	7900069	Human-Centered Systems Seminar: Engineering			Mädche
WT 24/25	7900106	Hospital Management			Hansis
WT 24/25	7900151	Master Seminar in Data Science and Machine Learning			Geyer-Schulz
WT 24/25	7900163	Seminar Human Resource Management (Master)			Nieken

WT 24/25	7900164	Seminar Human Resources and Organizations (Master)	Nieken
WT 24/25	7900184	Seminar in Finance (Master)	Ruckes
WT 24/25	7900203	Seminar "Finance in a nutshell"	Uhrig-Homburg
WT 24/25	7900233	Human-Centered Systems Seminar: Research	Mädche
WT 24/25	7900237	Case Studies Seminar: Innovation Management	Weissenberger-Eibl
WT 24/25	7900318	Bond Markets - Models & Derivatives	Uhrig-Homburg
WT 24/25	7900333	Seminar Digital Marketing (Master)	Kupfer
WT 24/25	7900335	Seminar Energy Economics IV	Fichtner
WT 24/25	7900355	AI Innovation Ecosystems	Weissenberger-Eibl, Beyer
WT 24/25	7900364	Connecting the Challenges of Servitization with Circular Economy: A Literature Review	Satzger
WT 24/25	79-2579919-M	Seminar Management Accounting - Sustainability Topics (Master)	Wouters
WT 24/25	7981976	Seminar in Production and Operations Management I	Schultmann
WT 24/25	7981977	Seminar in Production and Operations Management II	Schultmann
WT 24/25	7981978	Seminar in Production and Operations Management III	Schultmann
WT 24/25	7981979	Seminar Energy Economics I	Fichtner
WT 24/25	7981980	Seminar Energy Economics II	Fichtner
WT 24/25	7981981	Seminar Energy Economics III	Fichtner
ST 2025	00064	Seminar Social Sentiment in Times of Crises	Weinhardt
ST 2025	7900008	Hospital Management	Hansis
ST 2025	7900019	Master Seminar in Data Science and Machine Learning	Geyer-Schulz
ST 2025	7900025	Successful Transformation Through Innovation	Busch
ST 2025	7900050	Language Models for Structured Literature Reviews	Satzger
ST 2025	7900052	Entrepreneurship Research	Terzidis
ST 2025	7900093	Seminar Smart Grid and Energy Markets	Weinhardt
ST 2025	7900101	Seminar Human Resource Management (Master)	Nieken
ST 2025	7900127	Seminar in Finance (Master)	Uhrig-Homburg
ST 2025	7900190	Human-Centered Systems Seminar: Engineering	Mädche
ST 2025	7900214	Seminar Business Data Analytics	Weinhardt
ST 2025	7900231	Seminar Human Resources and Organizations (Master)	Nieken
ST 2025	7900233	Seminar in Marketing and Sales (Master)	Klarmann
ST 2025	7900240	Seminar "The Future of Marketing" (Master)	Kupfer
ST 2025	7900256	Seminar Positive Information Systems	Weinhardt
ST 2025	7900261	Human-Centered Systems Seminar: Research	Mädche
ST 2025	7900265	User-Adaptive Systems Seminar	Mädche
ST 2025	7900318	Practical Seminar: Data Science for Industrial Applications	Satzger
ST 2025	7900319	Service Design Thinking	Satzger
ST 2025	7900320	Practical Seminar Service Innovation	Satzger
ST 2025	7900326	Seminar Energy Economics VI	Fichtner
ST 2025	7900364	Market Design (MA)	Puppe
ST 2025	7900370	ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems	Mädche
ST 2025	79-2579919-M	Seminar Management Accounting - Sustainability Topics (Master)	Wouters
ST 2025	792581030	Seminar Energy Economics IV	Fichtner
ST 2025	792581031	Seminar Energy Economics V	Plötz
ST 2025	7940469	Master Seminar: Trustworthy AI [SS252540469]	Pfeiffer
ST 2025	7981976	Seminar in Production and Operations Management I	Schultmann
ST 2025	7981977	Seminar in Production and Operations Management II	Schultmann
ST 2025	7981979	Seminar Energy Economics I	Fichtner
ST 2025	7981981	Seminar Energy Economics III	Fichtner

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Development of Sustainable Digital Business Models** **Seminar (S) On-Site**
2500043, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The topic of sustainability is becoming increasingly important for companies in Europe. For example, the demand for sustainable products has risen sharply in many sectors. More and more companies are obliged by guidelines and standards to report on the sustainability of their activities. At the same time, the digital transformation is progressing and offers companies opportunities to implement or communicate their plans digitally. The seminar examines how the topic of sustainability is anchored in the digital business modelling of companies.

Students first learn about the dimensions of business models and sustainability. The seminar then discusses various concepts from the literature that take sustainability into account in business modelling. Students develop their own approach to sustainable digital business modelling and apply it to selected company examples from different sectors. The results are 1) presented and discussed in presentations and 2) recorded in seminar papers.

V **AI Innovation Ecosystems** **Seminar (S) Online**
2500049, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Content
This research seminar uses the example of three innovation clusters in Baden-Württemberg to analyse innovation ecosystems and their potential special features in the field of artificial intelligence. The practical seminar benefits from expert input, but also places a clear focus on research methods and scientific work. A toolbox will be developed together, including literature reviews and interview techniques, which will later facilitate the work on the Master's thesis.
Firstly, the concept of innovation ecosystems is examined. Despite the frequently used term, the state of the art is still relatively open and an overview can be developed together. Then, using the example of the AI Health Innovation Cluster, a cluster is presented and its political history, structure and goal (achievement) are analysed. In the following two sessions, the IPAI and Cyber Valley will be analysed by experts and groups of students.
Since the students will be responsible for much of the seminar themselves, in addition to practical and methodological inputs, a preliminary meeting will take place on 31 October (6-7 pm) to allow sufficient preparation time. The seminar will take place virtually.

V **Seminar (S) On-Site**
2530586, WS 24/25, SWS, Language: German, Open in study portal

Content
Within this seminar eLearning videos are produced to different topics out of the contents of our lectures. The student gets in touch with scientific work. Through profound working on a specific scientific topic the student is meant to learn the foundations of scientific research and reasoning in particular in finance.Through conduction of the video the student becomes familiar with the fundamental techniques for presentations and foundations of scientific reasoning. In addition, the student earns rhetorical skills.

The success is monitored by the development of an eLearning video and by the writing of a project report (according to §4(2), 3 SPO).

The overall grade is made up of these partial performances.

Recommendations:

Knowledge of the content of the modules *Essentials of Finance* [WW3BWLFBV1] (for bachelor students) and *F1 (Finance)* [WW4BWLFBV1] (for master students) is assumed.

The total workload for this course is approximately 90 hours. For further information see German version.

Organizational issues
Kickoff am 21.10.24 um 16 Uhr, Zwischenpräsentation am 10.12.24, 16 Uhr und Abschlusspräsentation am 21.01.25, 17:45 Uhr am Campus B (Geb. 09.21), Raum 209

V **Business Data Analytics** — **Seminar (S)** **On-Site**
2540473, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Content
wird auf deutsch und englisch gehalten

Organizational issues
Blockveranstaltung, siehe WWW

V **Master Seminar in Data Science and Machine Learning** — **Seminar (S)** **Blended (On-Site/Online)**
2540510, WS 24/25, 2 SWS, Language: German, Open in study portal

V **Case studies seminar: Innovation management** — **Seminar (S)** **On-Site**
2545105, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The objective of the seminar is to master selected concepts and methods of innovation management and then to apply these practically. Working in groups, the students apply the described concepts and methods of innovation management to a case study from the industry to answer specific questions. Accordingly, the block seminar involves a switch from input to the application of this input. At the end, the results of the group work are presented in the form of a seminar paper and discussed by the whole course. A short introduction to presentation techniques is planned to help students prepare the seminar papers.

Literature
Werden in der ersten Veranstaltung bekannt gegeben.

V **Hospital Management** — **Block (B)** **Online**
2550493, WS 24/25, 2 SWS, Language: German, Open in study portal

V **Seminar Human Resource Management (Master)** — **Seminar (S)** **On-Site**
2573012, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Blockveranstaltung siehe Homepage

V **Seminar Human Resources and Organizations (Master)** **Seminar (S) On-Site**
2573013, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Blockveranstaltung siehe Homepage

V **Seminar Management Accounting - Sustainability Topics** **Seminar (S) On-Site**
2579919, WS 24/25, 2 SWS, Language: English, Open in study portal

Content
The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively prediscibed. The seminar course is concentrated in several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources.

Examination:

- The performance review is carried out in the form of a “Prüfungsleistung anderer Art” (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade is made up of the grade of the seminar paper, the presentation and the contributions in the seminar sessions.

Required prior Courses:

- The course requires a basic knowledge of finance and accounting.

Workload:

- The total workload for this course is approximately 90 hours. For further information see German version.

Note:

- Maximum of 8 students.

Organizational issues
Ort und Zeit werden noch bekannt gegeben bzw. über ILIAS

Literature
Will be announced in the course.

V Successful transformation through innovation
Seminar (S)
On-Site
2500018, SS 2025, 2 SWS, Language: German, Open in study portal

Content
This seminar uses strategic innovation management and concepts such as organizational ambidexterity, boundary spanning and stakeholder approaches to shed light on how companies can increase their innovative capacity through innovation. Students will use a core paper to understand the steps a company takes to become an innovative organization. The aim is to understand how medium-sized companies can develop into innovation-driven organizations in the context of organizational inertia and path dependency with the help of the aforementioned concepts. Part of the seminar will be to analyze the role of different stakeholders and how companies can become part of innovation ecosystems.

Based on the impulses and the core paper, students will apply the concepts they have learned to selected companies and present their results. These are also incorporated into academic seminar papers. As part of this work process, students deal independently with a current, research-oriented question and apply scientific criteria consistently. They research relevant information, analyze and abstract it critically and draw their own conclusions on this basis, reflecting their interdisciplinary knowledge and selectively developing current research findings.

The results obtained are systematically presented in written and oral form in compliance with academic standards - including structured presentation, correct specialist terminology and comprehensible references. In doing so, the students argue in a technically sound manner and are able to defend their positions in scientific discourse with experts. In addition, they are familiar with the DFG Code of Conduct “Guidelines for Safeguarding Good Scientific Practice” and successfully apply these guidelines in the preparation of their scientific work.

Organizational issues
Weblink: https://itm.entechnon.kit.edu/192_1281.php

V ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems
Seminar (S)
Blended (On-Site/Online)
2500056, SS 2025, 2 SWS, Language: English, Open in study portal

Content

Background: In the ABBA Summer School Seminar hosted at the Karlsruhe Decision & Design Lab (KD²Lab) at KIT, we aim to enable students to explore biosignal sensors for designing user-adaptive systems, focusing on gaze-adaptive systems. This comprehensive block seminar is intended for both bachelor's and master's students who want to gain an understanding of biosignal and the development of user-adaptive systems. The learning objective is to design human-centered biosignal-adaptive systems to address user needs in learning scenarios.

Course Content: Throughout the summer school, students will learn the foundations of biosignal-adaptive systems through an introductory lecture and apply the knowledge in practical group work. For the group work, we offer students the concept of designing a gaze-adaptive tutor for immersive learning. Aiming to address user challenges in this context, we provide eye-tracking data and an existing gaze-adaptive VR learning application in the kick-off event. The students will have one week to work in groups to understand the task and existing resources, before returning one week later to attend the three-day group work sessions. During the three-day seminar, we encourage students to integrate GenAI technologies for their design and implementation. In the end, students should present their results to showcase the functionality, innovation, and prototype of their gaze-adaptive tutoring systems.

Learning Outcome: By successfully achieving the learning objective, students will receive a certificate from KIT and will have the opportunity to apply their acquired skills and knowledge for further research.

Organization: The seminar will be held **with a one-day kick-off event (with an introduction lecture, 16th July) and one week later a three-day block-seminar format (21st - 23rd July)** at KD²Lab (Etage 1, Fritz-Erler-Straße 1-3, 76131 Karlsruhe) with 3 ECTS. For any questions, please ask Luke Shi Liu (shi.liu@kit.edu) for more information!

V **Human-Centered Systems Seminar: Engineering** — **Seminar (S)** **Blended (On-Site/Online)**

2500125, SS 2025, 3 SWS, Language: English, Open in study portal

Content

Formerly known as "Current Topics in Digital Transformation"

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the human-centered systems lab (Prof. Mädche). Students will work on a dedicated topic in the context of human-centered systems and apply a pre-defined research method. A broad spectrum of topics is offered every semester, topics may range from creating an experimental design, analyzing collected data, or systematically comparing existing software prototypes in a specific field of interest.

V **Master Seminar: Trustworthy AI** — **Seminar (S)** **On-Site**

2540469, SS 2025, 2 SWS, Language: English, Open in study portal

Content

Artificial Intelligence is shaping critical areas of society, but ensuring fairness, transparency, and trust remains a challenge. Our master seminar, "Trustworthy AI," explores key issues such as bias detection, intersectional fairness, and explainability in AI systems. We address bias in AI-driven decision-making, particularly in critical areas like credit scoring, which is classified as a high-risk application context by the AI Act, and examine methods to enhance fairness. A crucial focus is on developing transparent AI models and understanding how explanations influence trust in automated systems. Additionally, we analyze large language models, their limitations, and innovative retrieval methods such as GraphRAG, which enhance knowledge representation in AI.

This seminar is offered by the newly established Information Systems III research group headed by Prof. Dr. Jella Pfeiffer at the Institute for Information Systems (WIN). To learn more about us, please visit our website (WIN - Information Systems III).

V **Data Science for Industrial Applications** — **Seminar (S)** **On-Site**

2540493, SS 2025, 2 SWS, Language: English, Open in study portal

Content
Learning Objectives

This seminar will require you to screen, select, and apply information systems theories and methodologies to solve contemporary challenges in the manufacturing and adjacent industries. This will include both critical reviews of the literature state-of-the-art [1-2] as well as the systematic conduct of design science research and machine learning methods [3-4]. You will identify key problems in real-world use cases, derive relevant research questions, and systematically gather, choose, and apply academic knowledge to develop solutions in the form of proof-of-concepts or prototypes.

Course Credits

The seminar can be credited as Seminar Betriebswirtschaftslehre A [T-WIWI-103474], Seminar Betriebswirtschaftslehre B [T-WIWI-103476] or Seminar Wirtschaftsinformatik [T-WIWI-109827] (3 ECTS). Other courses may be credited upon request.

Seminar Description

The Internet of Things (IoT) is significantly transforming industries such as automotive, healthcare, and energy. With the rise of ubiquitous computing power, connectivity/internet access, and the economic application of sensors [5], physical products are providing vast amounts of data, enabling the development of smart services [6]. While such IoT use cases are projected to open a market potential valued at $3.3 billion in 2030 [7], the industry is still far from exploiting its full capabilities. To solve this challenge, cutting-edge academic knowledge in information systems and machine learning is key to generating valuable insights from machine data.

The seminar is held in cooperation with international industry partners, who provide real-world datasets and ongoing access to subject matter experts. Students will work in teams of 2-4 on different topics and datasets. The assignments will be handed out in a joint kick-off event – to be scheduled once participating students have been selected. Attendance at this kick-off event is mandatory and a prerequisite for participation. Students are required to submit a seminar paper of 12-15 pages on an individual basis.

Expertise in Python and Data Science / Machine Learning as well as successful participation in the course “Artificial Intelligence in Service Systems” (T-WIWI-108715) are strongly recommended.

Contact

Daniel Hendricks – daniel.hendriks@kit.edu

Philipp Spitzer - philipp.spitzer@kit.edu

Joshua Holstein – joshua.holstein@kit.edu

The practical seminar will be held in English. Application documents can be handed in in English or German.

[1] Webster, J., Watson, R. T. (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review. MIS Quarterly, 26 (2) xiii-xxiii.

[2] Brocke, J. v. et al. (2009), Reconstructing the Giant: On the Importance of Rigour in Documenting the Literature Search Process. *Proceedings of the European Conference on Information Systems*, paper 161.

[3] Wirth, R., Hipp, J. (2000). CRISP-DM: Towards a Standard Process Model for Data Mining. Proceedings of the 4th International Conference on the Practical Applications of Knowledge Discovery and Data Mining, 29-40.

[4] Peffers, K., Tuunanen, T., Rothenberger, M., Chatterjee, S. (2008). A Design Science Research Methodology for Information Systems Research. Journal of Management Information Systems, 24 (3) 45–78.

[5] Martin, D.; Kühl, N.; Satzger, G. (2021). Virtual Sensors. Business & Information Systems Engineering, 63 (3) 315-323.

[6] Hunke, F., Heinz, D. Satzger, G. (2022). Creating customer value from data: foundations and archetypes of analytics-based services. Electronic Markets, 32, 503–521.

[7] Chui, M., Collins, M., Patel, M. (2021). IoT value set to accelerate through 2030: Where and how to capture it. McKinsey & Company. URL: https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/iot-value-set-to-accelerate-through-2030-where-and-how-to-capture-it

V **Master Seminar in Data Science and Machine Learning** **Seminar (S)**
2540510, SS 2025, 2 SWS, Language: German/English, Open in study portal

V **User-Adaptive Systems Seminar** **Seminar (S)**
2540553, SS 2025, 2 SWS, Language: English, Open in study portal **Blended (On-Site/Online)**

Content
User-adaptive systems collect and analyze biosignals from users to recognize user states as a basis for adaptation. Thermic, mechanical, electric, acoustic, and optical signals are collected using sensors which are integrated in wearables, e.g. glasses, earphones, belts, or bracelets. The collected data is processed with analytics and machine learning techniques in order to determine short-term, evolving over time, and long-term user states in the form of user characteristics, affective-cognitive states, or behavior. Finally, the recognized user states are leveraged for realizing user-centric adaptations.

In this seminar, interdisciplinary teams of students design, develop, and evaluate a user-adaptive system prototype leveraging state-of-the-art hard- and software. This seminar follows an interdisciplinary approach. Students from the fields of computer science, information systems and industrial engineering & management collaborate in the prototype design, development, and evaluation.

The seminar is carried out in cooperation between Teco/Chair of Pervasive Computing Systems (Prof. Beigl) and the Institute of Information Systems and Marketing (h-lab, Prof. Mädche). It is offered as part of the DFG-funded graduate school “KD2School: Designing Adaptive Systems for Economic Decisions“ (https://kd2school.info/)

Learning objectives of the seminar

- Explain what a user-adaptive system is and how it can be conceptualized
- Suggest and evaluate different design solutions for addressing the identified problem
- Build a user-adaptive system prototype using state-of-the-art hard- and software
- Perform a user-centric evaluation of the user-adaptive system prototype

Prerequisites
Strong analytical abilities and profound software development skills are required.

Organizational issues
Termine werden bekannt gegeben

Literature
Required literature will be made available in the seminar.

V **Human-Centered Systems Seminar: Research** — **Seminar (S)**
2540557, SS 2025, 3 SWS, Language: English, Open in study portal — **Blended (On-Site/Online)**

Content
Formerly known as "Information Systems and Service Design Seminar"

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the research group IS I (Prof. Mädche). The research group “Information Systems I” (IS I) headed by Prof. Mädche focuses in research, education, and innovation on designing interactive intelligent systems. It is positioned at the intersection of Information Systems and Human-Computer Interaction (HCI).

In the seminar, participants will get deeper insights in a contemporary research topic in the field of information systems, specifically interactive intelligent systems.

The actual seminar topics will be derived from current research activities of the research group. Our research assistants offer a rich set of topics from our research clusters (digital experience and participation, intelligent enterprise systems, or digital services design & innovation). Students can select among these topics individually depending on their personal interests. The seminar is carried out in the form of a literature-based thesis project. In the seminar, students will acquire the important methodological skills of running a systematic literature review.

Learning Objectives

- focus on a contemporary topic at the intersection of Information Systems and Human-Computer Interaction (HCI), specifically interactive intelligent systems
- carry out a structured literature search for a given topic
- aggregate the collected information in a suitable way to present and extract knowledge
- write a seminar thesis following academic writing standards
- deliver a presentation in a scientific context in front of an auditorium

Prerequisites

No specific prerequisites are required for the seminar.

Literature

Further literature will be made available in the seminar.

Organizational issues
Termine werden bekannt gegeben

V **Entrepreneurship Research** **Seminar (S)**
2545002, SS 2025, 2 SWS, Language: English, Open in study portal **On-Site**

Content
Content

In this course, the students choose from various relevant and current research topics in entrepreneurship and independently develop a topic that suits them in small teams. Initially, there is an introduction to standard methods such as systematic literature review, design science, qualitative and quantitative data analysis, and more. The seminar topic must be scientifically prepared and presented in 15-20 pages as part of a written elaboration. The seminar results are presented in a block event at the end of the semester (20 min + 10 min open discussion).

Learning Objectives

The foundations of independent scholarly work (literature review, argumentation + discussion, citation of literature sources, application of qualitative, quantitative, and simulation methods) are developed as part of the written elaboration. The competencies acquired in the seminar can be utilized in preparing for a potential master's thesis. Therefore, the seminar is mainly aimed at students who intend to write their thesis at the Chair of Entrepreneurship and Technology Management and wish to gain substantial experience in entrepreneurship research.

Organizational issues
Thursday, 08.05.2025, 10.00-16.00
Thursday, 05.06.2025, 10.00-16.00
Thursday, 10.07.2025, 09.00-12.00

Registration is via the Wiwi-Portal.

Literature
Will be announced in the seminar.

V

Hospital Management

2550493, SS 2025, 2 SWS, Language: German, Open in study portal

Block (B)
Online

Content
The "Hospital Management" seminar is intended to help students in higher semesters to simulate some of the organizational and management tasks that arise in a medium-sized service company using a specific example (here: management of a medium-sized hospital). The seminar thus represents a kind of "bracket" for a large number of individual skills that the students have acquired during their studies. The seminar takes place as a webinar.

Students will be asked about the typical interaction of a medium-sized hospital with its environment in 5 thematic blocks: Interaction with the customer (patients) / Interaction with employees* / Interaction with business partners / Interaction with stakeholders / Summarizing opportunities and risks.

Organizational issues
Das Seminar wird als Blockveranstaltung stattfinden. Die Termine werden bei der Bewerbung über das Wiwi-Portal bekanntgegeben.

V

Seminar Human Resource Management (Master)

2573012, SS 2025, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

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

V

Seminar Human Resources and Organizations (Master)

2573013, SS 2025, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

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

V **Seminar Management Accounting - Sustainability Topics** **Seminar (S) On-Site**
2579919, SS 2025, 2 SWS, Language: English, Open in study portal

Content
The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively prediscibed. The seminar course is concentrated in several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources.

Workload:

- The total workload for this course is approximately 90 hours. For further information see German version.

Examination:

- The performance review is carried out in the form of a “Prüfungsleistung anderer Art” (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade is made up of the grade of the seminar paper, the presentation and the contributions in the seminar sessions.

Required prior Courses:

- The course requires a basic knowledge of finance and accounting.

Note:

- Maximum of 8 students.

Organizational issues
Geb.05.20, 2A-12.1; Termine werden bekannt gegeben

Literature
Will be announced in the course.

T 3.499 Course: Seminar in Economic Policy [T-WIWI-102789]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Exams			
WT 24/25	7900212	Seminar in Economic Policy	Ott
ST 2025	7900051	Seminar in Economic Policy	Ott

Assessment
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

Recommendations
At least one of the lectures "Theory of Endogenous Growth" or "Innovation Theory and Policy" should be attended in advance, if possible.

T 3.500 Course: Seminar in Economics (Bachelor) [T-WIWI-103487]

Responsible: Professorenschaft des Fachbereichs Volkswirtschaftslehre
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	2520405	Topics in Experimental Economics		Seminar / 🗣	Reiß, Peters
WT 24/25	2520561	Wirtschaftstheoretisches Seminar I (Bachelor)	2 SWS	Seminar / 🧩	Puppe, Ammann, Kretz, Okulicz
WT 24/25	2520562	Wirtschaftstheoretisches Seminar II (Bachelor)	2 SWS	Seminar / 🗣	Puppe, Ammann, Kretz
WT 24/25	2521310	Topics in Econometrics	2 SWS	Seminar	Schienle, Krüger, Rüter
WT 24/25	2560130	Seminar Public Finance	2 SWS	Seminar / 🧩	Wigger, Schmelzer
WT 24/25	2560140	Seminar Game Theory and Behavioral Economics (Bachelor)	2 SWS	Seminar / 🗣	Rau, Rosar
WT 24/25	2560141	AI and Digitization for Society (Bachelor)	2 SWS	Seminar / 🧩	Zhao
WT 24/25	2560400	Seminar in Macroeconomics I	2 SWS	Seminar / 🧩	Brumm, Pegorari, Frank
WT 24/25	2561208	Selected aspects of European transport planning and -modelling	2 SWS	Seminar	Szimba, Mitusch
ST 2025	2500009	Seminar in Economic Theory I	2 SWS	Seminar / 🗣	Ammann, Kretz, Okulicz
ST 2025	2500040	Seminar zur Bahnökonomie und -politik	2 SWS	Seminar / 🗣	Krenn, Mitusch
ST 2025	2520367	Strategische Entscheidungen	2 SWS	Seminar / 🧩	Ehrhart
ST 2025	2520535	Seminar in Economic Theory I	2 SWS	Seminar / 🗣	Ammann, Kretz, Okulicz
ST 2025	2560130	Seminar Public Finance	2 SWS	Block / 🧩	Wigger, Schmelzer
ST 2025	2560259	Organisation and Management of Development Projects	2 SWS	Seminar / 🧩	Sieber
ST 2025	2560400	Seminar in Macroeconomics I	2 SWS	Seminar / 🧩	Brumm, Kissling, Frank
ST 2025	2560401	Seminar in Macroeconomics II	2 SWS	Seminar / 🧩	Brumm, Pegorari
ST 2025	2560553	Seminar Co-opetition: A Practical Perspective on Game Theory in the Digital Economy (Bachelor)	2 SWS	Seminar / 🗣	Rosar
ST 2025	2560555	Seminar Lying and Cheating in Economic Decision Situations (Bachelor)	2 SWS	Seminar / 🗣	Rau

Exams			
WT 24/25	7900124	Seminar Game Theory and Behavioral Economics (Bachelor)	Puppe
WT 24/25	7900139	Selected Aspects of European Transport Planning and Modelling	Mitusch
WT 24/25	7900144	Topics in Econometrics	Schienle
WT 24/25	7900155	Seminar: How to Make Democracy Work? Voting Methods in Theory and Practice (Bachelor)	Puppe
WT 24/25	7900212	Seminar in Economic Policy	Ott
WT 24/25	7900278	Seminararbeit AI and Digitization for Society (Bachelor)	Puppe
WT 24/25	79100005	Topics in Experimental Economics	Reiß
WT 24/25	79sefi1	Seminar Public Finance (Bachelor)	Wigger

ST 2025	7900038	Seminar in Economics (Bachelor)	Brumm
ST 2025	7900051	Seminar in Economic Policy	Ott
ST 2025	7900060	Co-opetition: A practical perspective to game theory in the game of business (Bachelor)	Puppe
ST 2025	7900130	Lying and Cheating in Economic Decision Situations (Bachelor)	Puppe
ST 2025	7900164	Seminar in Economics (Bachelor)	Mitusch
ST 2025	7900358	Game Theory in Practice: How Do People Really Play? (Bachelor)	Puppe
ST 2025	7900365	Market Design (BA)	Puppe
ST 2025	7900367	Seminar of railway economics and politics	Mitusch
ST 2025	79sefi1	Seminar Public Finance (Bachelor)	Wigger

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Topics in Experimental Economics** — **Seminar (S) On-Site**
2520405, WS 24/25, SWS, Language: German/English, Open in study portal

Organizational issues
Blockseminar; Blücherstraße 17; Termine werden separat bekannt gegeben

Literature
Als Pflichtliteratur dienen ausgewählte Paper.

V **Topics in Econometrics** — **Seminar (S)**
2521310, WS 24/25, 2 SWS, Language: German, Open in study portal

Organizational issues
Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

V **Seminar Game Theory and Behavioral Economics (Bachelor)** — **Seminar (S) On-Site**
2560140, WS 24/25, 2 SWS, Language: English, Open in study portal

Content
For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Organizational issues
Application is possible via https://portal.wiwi.kit.edu/Seminare

Kick-off: 23.10.24, 14.00 - 15.30 h, Geb. 01.85, KD2 Lab (1. floor über Außentreppe), Team Room

Presentations: 13.01.2025 08.00 - 13.00 h, 01.85, KD2 Lab (1. floor über Außentreppe), Team Room

V

AI and Digitization for Society (Bachelor)

2560141, WS 24/25, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Organizational issues
Application is possible via https://portal.wiwi.kit.edu/Seminare

Kick-off: 23.10.2024, 11.00 - 12.00 (online)

Presentations: 17.01.2025, 08.00 - 13.00 h, Geb. 01.85, KD2Lab Team room

V

Seminar Public Finance

2560130, SS 2025, 2 SWS, Language: German, Open in study portal

Block (B)
Blended (On-Site/Online)

Content
See German version.

Organizational issues
Termine werden bekannt gegeben.

Literature
Literatur wird zu Beginn des jeweiligen Seminars vorgestellt.

V

Seminar Co-opetition: A Practical Perspective on Game Theory in the Digital Economy (Bachelor)

2560553, SS 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
Dr. Frank Rosar, SoSe 2025, ECON – Lehrstuhl für Wirtschaftstheorie

Seminar Co-opetition: A Practical Perspective on Game Theory in the Digital Economy

This seminar offers an alternative perspective on game theory that is more applied, complementing the more mathematical approach taught in standard university courses (e.g., “Einführung in die Spieltheorie”).

Traditional game theory focuses on abstract mathematical models. The insights from these models are useful in real-life situations, particularly in business contexts. However, strategic interactions in such contexts are often complex, and it is not always obvious what the ‘right game’ looks like. Moreover, effectively communicating game-theoretical principles to colleagues, subordinates, and stakeholders is just as important as the analysis itself.

In their 1996 book “Co-opetition”, Nalebuff and Brandenburger address these issues by explaining game-theoretic principles using real-world business examples rather than mathematical models. The authors argue rigorously but ‘hide’ the underlying mathematical models. While many of the book’s stories now seem outdated, the lessons remain valuable for anyone interested in applying game theory.

Seminar Objectives
In this seminar, students will either work alone or in small groups. Each group will be assigned one chapter of the book and will address three key tasks:

1. Presentation of Ideas: Each group will demonstrate their understanding of the assigned chapter by clearly communicating its key insights in their own words.
2. Application to Modern Contexts: Each group will transfer the chapter’s ideas to examples from today's digital economy, such as platform markets, AI-driven business models, digital advertising strategies, and data-driven competition.
3. Linking to Game Theory: Each group will demonstrate their ability to engage with academic literature by identifying literature related to their book chapter and discussing these connections.

Seminar Organization
Introductory Meeting: The seminar will start with a kick-off meeting on April 24, 2024, at 14:00. In this meeting, students will be assigned to groups and chapters of the book and receive further guidance on expectations. The meeting will last approximately one hour.

Presentations: Each group will give a 30-minute presentation, followed by a discussion, in a blocked event on June 27. Attendance at all presentations is mandatory for successful completion of the seminar.

Seminar paper: Each group must submit a 12-page seminar paper by August 3. The seminar paper is a polished version of the presentation, incorporating useful feedback from the discussion on the seminar presentation day.

For further questions, don't hesitate to get in touch with Dr. Frank Rosar (rosar@kit.edu).

References
Nalebuff, Barry J., Brandenburger, A. (1996). Co-opetition. Currency.

Organizational issues
Registration via WiWi-Portal

Kick-off: 24.04.2025

Presentations: 27.06.2025

V **Seminar Lying and Cheating in Economic Decision Situations (Bachelor)** **Seminar (S) On-Site**
2560555, SS 2025, 2 SWS, Language: English, Open in study portal

Content
Objective of the Seminar: 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 12–15 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (60%). There may be a bonus on the grade for actively participating in the discussions of the presentations.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Organizational issues
Obligatory: Application via WiWi-Portal during the seminar registration period

Presentations: 02.07.2025,
10.00 - 12.30 Seminar Room in 01.85, 5th floor
13.00 - 18.00 KD2Lab Teamraum

Seminar Topics in Political Economy

T 3.501 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-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	25000111	Statistics and Epidemics		Seminar / 🗣	Bracher
WT 24/25	2500024	Wirtschaftstheoretisches Seminar IV (Master)	2 SWS	Seminar / 🏵	Puppe, Kretz, Ammann, Okulicz
WT 24/25	2500047	Advanced Topics in Econometrics, Statistics and Data Science	2 SWS	Seminar	Schienle, Krüger, Buse, Rüter, Bracher, Nemcova
WT 24/25	2520405	Topics in Experimental Economics		Seminar / 🗣	Reiß, Peters
WT 24/25	2520500	Workshop on Economics, Finance and Statistics	2 SWS	Seminar	Puppe, Brumm, Nieken, Ott, Reiß, Ruckes, Schienle, Uhrig-Homburg, Wigger, Krüger
WT 24/25	2520563	Wirtschaftstheoretisches Seminar III (Master)	2 SWS	Seminar / 🗣	Ammann, Kretz
WT 24/25	2521310	Topics in Econometrics	2 SWS	Seminar	Schienle, Krüger, Rüter
WT 24/25	2560130	Seminar Public Finance	2 SWS	Seminar / 🏵	Wigger, Schmelzer
WT 24/25	2560142	Seminar Game Theory and Behavioral Economics (Master)	2 SWS	Seminar / 🗣	Rau, Rosar
WT 24/25	2560143	AI and Digitization for Society (Master)	2 SWS	Seminar / 🏵	Zhao
WT 24/25	2560282	Seminar in Economic Policy	2 SWS	Seminar / 🗣	Ott, Assistenten
WT 24/25	2560400	Seminar in Macroeconomics I	2 SWS	Seminar / 🏵	Brumm, Pegorari, Frank
WT 24/25	2561208	Selected aspects of European transport planning and -modelling	2 SWS	Seminar	Szimba, Mitusch
ST 2025	2500040	Seminar zur Bahnökonomie und -politik	2 SWS	Seminar / 🗣	Krenn, Mitusch
ST 2025	2520367	Strategische Entscheidungen	2 SWS	Seminar / 🏵	Ehrhart
ST 2025	2520536	Seminar in Economic Theory II	2 SWS	Seminar / 🗣	Ammann, Kretz, Okulicz
ST 2025	2520563	Wirtschaftstheoretisches Seminar III	2 SWS	Seminar / 🗣	Ammann, Kretz, Okulicz
ST 2025	2521310	Advanced Topics in Econometrics	2 SWS	Seminar	Schienle, Buse, Rüter, Bracher, Eberl
ST 2025	2560130	Seminar Public Finance	2 SWS	Block / 🏵	Wigger, Schmelzer
ST 2025	2560282	Seminar in economic policy	2 SWS	Seminar / 🗣	Ott, Assistenten
ST 2025	2560400	Seminar in Macroeconomics I	2 SWS	Seminar / 🏵	Brumm, Kissling, Frank
ST 2025	2560401	Seminar in Macroeconomics II	2 SWS	Seminar / 🏵	Brumm, Pegorari
ST 2025	2560552	Seminar Co-opetition: A Practical Perspective on Game Theory in the Digital Economy (Master)	2 SWS	Seminar / 🗣	Rosar
ST 2025	2560554	Seminar Lying and Cheating in Economic Decision Situations (Master)	2 SWS	Seminar / 🗣	Rau
Exams					

WT 24/25	79000111	Statistics and Epidemics	Bracher
WT 24/25	7900021	Seminar: How to Make Democracy Work? Voting Methods in Theory and Practice (Master)	Puppe
WT 24/25	7900090	Advanced Topics in Econometrics, Statistics and Data Science	Schienle
WT 24/25	7900139	Selected Aspects of European Transport Planning and Modelling	Mitusch
WT 24/25	7900140	Seminar Game Theory and Behavioral Economics (Master)	Puppe
WT 24/25	7900212	Seminar in Economic Policy	Ott
WT 24/25	7900296	Seminar AI and Digitization for Society (Master)	Puppe
WT 24/25	79100005	Topics in Experimental Economics	Reiß
WT 24/25	79sefi2	Seminar Public Finance A (Master)	Wigger
ST 2025	7900051	Seminar in Economic Policy	Ott
ST 2025	7900059	Co-opetition: A practical perspective to game theory in the game of business (Master)	Puppe
ST 2025	7900131	Lying and Cheating in Economic Decision Situations (Master)	Puppe
ST 2025	7900164	Seminar in Economics (Bachelor)	Mitusch
ST 2025	7900331	Seminar in Economics A (Master)	Brumm
ST 2025	7900357	Game Theory in Practice: How Do People Really Play? (Master)	Puppe
ST 2025	7900364	Market Design (MA)	Puppe
ST 2025	7900367	Seminar of railway economics and politics	Mitusch
ST 2025	79sefi2	Seminar Public Finance A (Master)	Wigger

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Statistics and Epidemics** **Seminar (S)**
25000111, WS 24/25, SWS, Language: English, Open in study portal **On-Site**

Content

Motivation

Infectious disease epidemiology gives rise to a large variety of real-time data streams. During the COVID-19 pandemic, the interpretation and statistical analysis of these data has proven crucial, but also highly challenging. In this seminar, students will get to know central concepts of infectious disease surveillance and modelling from a statistical perspective. Following an overview of various aspects in the form of blocked lectures, students will choose a more specific topic for their seminar thesis.

Learning Goals

Students develop an understanding of central modeling tasks and methods, including

- estimation of reproductive numbers
- compartment models of disease spread
- nowcasting and short-term forecasting of disease spread
- detection of outbreaks
- diagnostic testing

Moreover, they get to know various data types commonly used in the analysis of disease spread.

Logistics

The project seminar is worth 4.5 credit points (Leistungspunkte). There will be three blocked lectures (approx. 135 minutes each) in the beginning of the lecture period. For the various topics covered, subjects for seminar theses will be proposed (and students are allowed to propose their own topics). Towards the end of the semester, students present their progress on the chosen topics to the group. Grades will be based on this presentation (25%) and the final report (75%).

Organizational issues

Prerequisites

Students should have a very good working knowledge of statistics, including proficiency in a programming language for applied data analysis. The lecture VWL3 Introduction to Econometrics is a prerequisite for the project seminar. Most available software in the field is in R, but in principle Python can be used as well. Advanced knowledge of biology, medicine or epidemiology is not required.

Application Procedure

Please submit a transcript of records as well as a short letter of motivation (roughly 200 words) via WIWI-Portal: https://portal.wiwi.kit.edu/ys/8223

Application time frame: July 20th, 2024 to September, 30th, 2024.

V **Advanced Topics in Econometrics, Statistics and Data Science** — **Seminar (S)**
2500047, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

V **Topics in Experimental Economics** — **Seminar (S) On-Site**
2520405, WS 24/25, SWS, Language: German/English, Open in study portal

Organizational issues
Blockseminar; Blücherstraße 17; Termine werden separat bekannt gegeben

Literature
Als Pflichtliteratur dienen ausgewählte Paper.

V **Topics in Econometrics** — **Seminar (S)**
2521310, WS 24/25, 2 SWS, Language: German, Open in study portal

Organizational issues
Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

V Seminar Game Theory and Behavioral Economics (Master)
2560142, WS 24/25, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Organizational issues
Application is possible via https://portal.wiwi.kit.edu/Seminare

Kick-off: 23.10.24, 14.00 - 15.30 h, Bdg. 01.85, KD2Lab (1. floor über Außentreppe), Team Room

Presentations: 13.01.2025, 14.00 - 18.00 h, Bdg. 01.85, KD2Lab (1. floor über Außentreppe), Team Room

V AI and Digitization for Society (Master)
2560143, WS 24/25, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Organizational issues
Application is possible via https://portal.wiwi.kit.edu/Seminare

Kick-off: 23.10.2024, 11.00 - 12.00 (online)

Presentations: 17.01.2025, 14.00 - 18.00 h, Geb. 01.85, KD2Lab Team room

V Advanced Topics in Econometrics
2521310, SS 2025, 2 SWS, Language: German/English, Open in study portal

Seminar (S)

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

V Seminar Public Finance
2560130, SS 2025, 2 SWS, Language: German, Open in study portal

Block (B)
Blended (On-Site/Online)

Content
See German version.

Organizational issues
Termine werden bekannt gegeben.

Literature
Literatur wird zu Beginn des jeweiligen Seminars vorgestellt.

V Seminar Co-opetition: A Practical Perspective on Game Theory in the Digital Economy (Master)
2560552, SS 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
Seminar Co-opetition: A Practical Perspective on Game Theory in the Digital Economy

This seminar offers an alternative perspective on game theory that is more applied, complementing the more mathematical approach taught in standard university courses (e.g., “Einführung in die Spieltheorie”).

Traditional game theory focuses on abstract mathematical models. The insights from these models are useful in real-life situations, particularly in business contexts. However, strategic interactions in such contexts are often complex, and it is not always obvious what the ‘right game’ looks like. Moreover, effectively communicating game-theoretical principles to colleagues, subordinates, and stakeholders is just as important as the analysis itself.

In their 1996 book “Co-opetition”, Nalebuff and Brandenburger address these issues by explaining game-theoretic principles using real-world business examples rather than mathematical models. The authors argue rigorously but ‘hide’ the underlying mathematical models. While many of the book’s stories now seem outdated, the lessons remain valuable for anyone interested in applying game theory.

Seminar Objectives
In this seminar, students will either work alone or in small groups. Each group will be assigned one chapter of the book and will address three key tasks:

1. Presentation of Ideas: Each group will demonstrate their understanding of the assigned chapter by clearly communicating its key insights in their own words.
2. Application to Modern Contexts: Each group will transfer the chapter’s ideas to examples from today's digital economy, such as platform markets, AI-driven business models, digital advertising strategies, and data-driven competition.
3. Linking to Game Theory: Each group will demonstrate their ability to engage with academic literature by identifying literature related to their book chapter and discussing these connections.

Seminar Organization
Introductory Meeting: The seminar will start with a kick-off meeting on April 24, 2024, at 14:00. In this meeting, students will be assigned to groups and chapters of the book and receive further guidance on expectations. The meeting will last approximately one hour.

Presentations: Each group will give a 30-minute presentation, followed by a discussion, in a blocked event on June 27. Attendance at all presentations is mandatory for successful completion of the seminar.

Seminar paper: Each group must submit a 12-page seminar paper by August 3. The seminar paper is a polished version of the presentation, incorporating useful feedback from the discussion on the seminar presentation day.

For further questions, don't hesitate to get in touch with Dr. Frank Rosar (rosar@kit.edu).

References
Nalebuff, Barry J., Brandenburger, A. (1996). Co-opetition. Currency.

Organizational issues
Registration via WiWi-Portal

Kick-off Meeting: 24.04.2025

Seminar Presentations: 27.06.2025

V Seminar Lying and Cheating in Economic Decision Situations (Master)

Seminar (S)
On-Site

2560554, SS 2025, 2 SWS, Language: English, Open in study portal

Content
Objective of the seminar: 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 12–15 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (60%). There may be a bonus on the grade for actively participating in the discussions of the presentations.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Organizational issues
Obligatory: Application via WiWi-Portal during the seminar registration period

Presentations: 02.07.2025,
10.00 - 12.30 Seminar Room in 01.85, 5th floor
13.00 - 18.00 KD2Lab Teamraum

Seminar Topics in Political Economy

T 3.502 Course: Seminar in Economics B (Master) [T-WIWI-103477]

Responsible: Professorenschaft des Fachbereichs Volkswirtschaftslehre
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	25000111	Statistics and Epidemics		Seminar / 🗣	Bracher
WT 24/25	2500024	Wirtschaftstheoretisches Seminar IV (Master)	2 SWS	Seminar / 🧩	Puppe, Kretz, Ammann, Okulicz
WT 24/25	2500047	Advanced Topics in Econometrics, Statistics and Data Science	2 SWS	Seminar	Schienle, Krüger, Buse, Rüter, Bracher, Nemcova
WT 24/25	2520405	Topics in Experimental Economics		Seminar / 🗣	Reiß, Peters
WT 24/25	2520500	Workshop on Economics, Finance and Statistics	2 SWS	Seminar	Puppe, Brumm, Nieken, Ott, Reiß, Ruckes, Schienle, Uhrig-Homburg, Wigger, Krüger
WT 24/25	2520563	Wirtschaftstheoretisches Seminar III (Master)	2 SWS	Seminar / 🗣	Ammann, Kretz
WT 24/25	2521310	Topics in Econometrics	2 SWS	Seminar	Schienle, Krüger, Rüter
WT 24/25	2560130	Seminar Public Finance	2 SWS	Seminar / 🧩	Wigger, Schmelzer
WT 24/25	2560142	Seminar Game Theory and Behavioral Economics (Master)	2 SWS	Seminar / 🗣	Rau, Rosar
WT 24/25	2560282	Seminar in Economic Policy	2 SWS	Seminar / 🗣	Ott, Assistenten
WT 24/25	2560400	Seminar in Macroeconomics I	2 SWS	Seminar / 🧩	Brumm, Pegorari, Frank
WT 24/25	2561208	Selected aspects of European transport planning and -modelling	2 SWS	Seminar	Szimba, Mitusch
ST 2025	2500040	Seminar zur Bahnökonomie und -politik	2 SWS	Seminar / 🗣	Krenn, Mitusch
ST 2025	2520367	Strategische Entscheidungen	2 SWS	Seminar / 🧩	Ehrhart
ST 2025	2520536	Seminar in Economic Theory II	2 SWS	Seminar / 🗣	Ammann, Kretz, Okulicz
ST 2025	2520563	Wirtschaftstheoretisches Seminar III	2 SWS	Seminar / 🗣	Ammann, Kretz, Okulicz
ST 2025	2521310	Advanced Topics in Econometrics	2 SWS	Seminar	Schienle, Buse, Rüter, Bracher, Eberl
ST 2025	2560130	Seminar Public Finance	2 SWS	Block / 🧩	Wigger, Schmelzer
ST 2025	2560259	Organisation and Management of Development Projects	2 SWS	Seminar / 🧩	Sieber
ST 2025	2560282	Seminar in economic policy	2 SWS	Seminar / 🗣	Ott, Assistenten
ST 2025	2560400	Seminar in Macroeconomics I	2 SWS	Seminar / 🧩	Brumm, Kissling, Frank
ST 2025	2560401	Seminar in Macroeconomics II	2 SWS	Seminar / 🧩	Brumm, Pegorari
ST 2025	2560552	Seminar Co-opetition: A Practical Perspective on Game Theory in the Digital Economy (Master)	2 SWS	Seminar / 🗣	Rosar
ST 2025	2560554	Seminar Lying and Cheating in Economic Decision Situations (Master)	2 SWS	Seminar / 🗣	Rau
Exams					

WT 24/25	79000111	Statistics and Epidemics	Bracher
WT 24/25	7900090	Advanced Topics in Econometrics, Statistics and Data Science	Schienle
WT 24/25	7900139	Selected Aspects of European Transport Planning and Modelling	Mitusch
WT 24/25	7900140	Seminar Game Theory and Behavioral Economics (Master)	Puppe
WT 24/25	7900212	Seminar in Economic Policy	Ott
WT 24/25	7900296	Seminar AI and Digitization for Society (Master)	Puppe
WT 24/25	79100005	Topics in Experimental Economics	Reiß
WT 24/25	79sefi3	Seminar Public Finance B (Master)	Wigger
ST 2025	7900051	Seminar in Economic Policy	Ott
ST 2025	7900059	Co-opetition: A practical perspective to game theory in the game of business (Master)	Puppe
ST 2025	7900131	Lying and Cheating in Economic Decision Situations (Master)	Puppe
ST 2025	7900164	Seminar in Economics (Bachelor)	Mitusch
ST 2025	7900356	Seminar in Economics B (Master)	Brumm
ST 2025	7900357	Game Theory in Practice: How Do People Really Play? (Master)	Puppe
ST 2025	7900364	Market Design (MA)	Puppe
ST 2025	7900367	Seminar of railway economics and politics	Mitusch
ST 2025	79sefi3	Seminar Public Finance B (Master)	Wigger

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Statistics and Epidemics** **Seminar (S)**
25000111, WS 24/25, SWS, Language: English, Open in study portal **On-Site**

Content

Motivation

Infectious disease epidemiology gives rise to a large variety of real-time data streams. During the COVID-19 pandemic, the interpretation and statistical analysis of these data has proven crucial, but also highly challenging. In this seminar, students will get to know central concepts of infectious disease surveillance and modelling from a statistical perspective. Following an overview of various aspects in the form of blocked lectures, students will choose a more specific topic for their seminar thesis.

Learning Goals

Students develop an understanding of central modeling tasks and methods, including

- estimation of reproductive numbers
- compartment models of disease spread
- nowcasting and short-term forecasting of disease spread
- detection of outbreaks
- diagnostic testing

Moreover, they get to know various data types commonly used in the analysis of disease spread.

Logistics

The project seminar is worth 4.5 credit points (Leistungspunkte). There will be three blocked lectures (approx. 135 minutes each) in the beginning of the lecture period. For the various topics covered, subjects for seminar theses will be proposed (and students are allowed to propose their own topics). Towards the end of the semester, students present their progress on the chosen topics to the group. Grades will be based on this presentation (25%) and the final report (75%).

Organizational issues

Prerequisites

Students should have a very good working knowledge of statistics, including proficiency in a programming language for applied data analysis. The lecture VWL3 Introduction to Econometrics is a prerequisite for the project seminar. Most available software in the field is in R, but in principle Python can be used as well. Advanced knowledge of biology, medicine or epidemiology is not required.

Application Procedure

Please submit a transcript of records as well as a short letter of motivation (roughly 200 words) via WIWI-Portal: https://portal.wiwi.kit.edu/ys/8223

Application time frame: July 20th, 2024 to September, 30th, 2024.

V **Advanced Topics in Econometrics, Statistics and Data Science** — **Seminar (S)**
2500047, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

V **Topics in Experimental Economics** — **Seminar (S) On-Site**
2520405, WS 24/25, SWS, Language: German/English, Open in study portal

Organizational issues
Blockseminar; Blücherstraße 17; Termine werden separat bekannt gegeben

Literature
Als Pflichtliteratur dienen ausgewählte Paper.

V **Topics in Econometrics** — **Seminar (S)**
2521310, WS 24/25, 2 SWS, Language: German, Open in study portal

Organizational issues
Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

V Seminar Game Theory and Behavioral Economics (Master)
2560142, WS 24/25, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Organizational issues
Application is possible via https://portal.wiwi.kit.edu/Seminare

Kick-off: 23.10.24, 14.00 - 15.30 h, Bdg. 01.85, KD2Lab (1. floor über Außentreppe), Team Room

Presentations: 13.01.2025, 14.00 - 18.00 h, Bdg. 01.85, KD2Lab (1. floor über Außentreppe), Team Room

V Advanced Topics in Econometrics
2521310, SS 2025, 2 SWS, Language: German/English, Open in study portal

Seminar (S)

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

V Seminar Public Finance
2560130, SS 2025, 2 SWS, Language: German, Open in study portal

Block (B)
Blended (On-Site/Online)

Content
See German version.

Organizational issues
Termine werden bekannt gegeben.

Literature
Literatur wird zu Beginn des jeweiligen Seminars vorgestellt.

V Seminar Co-opetition: A Practical Perspective on Game Theory in the Digital Economy (Master)
2560552, SS 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
Seminar Co-opetition: A Practical Perspective on Game Theory in the Digital Economy

This seminar offers an alternative perspective on game theory that is more applied, complementing the more mathematical approach taught in standard university courses (e.g., “Einführung in die Spieltheorie”).

Traditional game theory focuses on abstract mathematical models. The insights from these models are useful in real-life situations, particularly in business contexts. However, strategic interactions in such contexts are often complex, and it is not always obvious what the ‘right game’ looks like. Moreover, effectively communicating game-theoretical principles to colleagues, subordinates, and stakeholders is just as important as the analysis itself.

In their 1996 book “Co-opetition”, Nalebuff and Brandenburger address these issues by explaining game-theoretic principles using real-world business examples rather than mathematical models. The authors argue rigorously but ‘hide’ the underlying mathematical models. While many of the book’s stories now seem outdated, the lessons remain valuable for anyone interested in applying game theory.

Seminar Objectives
In this seminar, students will either work alone or in small groups. Each group will be assigned one chapter of the book and will address three key tasks:

1. Presentation of Ideas: Each group will demonstrate their understanding of the assigned chapter by clearly communicating its key insights in their own words.
2. Application to Modern Contexts: Each group will transfer the chapter’s ideas to examples from today's digital economy, such as platform markets, AI-driven business models, digital advertising strategies, and data-driven competition.
3. Linking to Game Theory: Each group will demonstrate their ability to engage with academic literature by identifying literature related to their book chapter and discussing these connections.

Seminar Organization
Introductory Meeting: The seminar will start with a kick-off meeting on April 24, 2024, at 14:00. In this meeting, students will be assigned to groups and chapters of the book and receive further guidance on expectations. The meeting will last approximately one hour.

Presentations: Each group will give a 30-minute presentation, followed by a discussion, in a blocked event on June 27. Attendance at all presentations is mandatory for successful completion of the seminar.

Seminar paper: Each group must submit a 12-page seminar paper by August 3. The seminar paper is a polished version of the presentation, incorporating useful feedback from the discussion on the seminar presentation day.

For further questions, don't hesitate to get in touch with Dr. Frank Rosar (rosar@kit.edu).

References
Nalebuff, Barry J., Brandenburger, A. (1996). Co-opetition. Currency.

Organizational issues
Registration via WiWi-Portal

Kick-off Meeting: 24.04.2025

Seminar Presentations: 27.06.2025

V Seminar Lying and Cheating in Economic Decision Situations (Master)

Seminar (S)
On-Site

2560554, SS 2025, 2 SWS, Language: English, Open in study portal

Content
Objective of the seminar: 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 12–15 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (60%). There may be a bonus on the grade for actively participating in the discussions of the presentations.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Organizational issues
Obligatory: Application via WiWi-Portal during the seminar registration period

Presentations: 02.07.2025,
10.00 - 12.30 Seminar Room in 01.85, 5th floor
13.00 - 18.00 KD2Lab Teamraum

Seminar Topics in Political Economy

T 3.503 Course: Seminar in Engineering Science Master (approval) [T-WIWI-108763]

Responsible: Fachvertreter ingenieurwissenschaftlicher Fakultäten
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	3

Assessment
See German version.

Prerequisites
See module description.

Recommendations
None

T 3.504 Course: Seminar in Informatics (Bachelor) [T-WIWI-103485]

Responsible: Professorenschaft des Instituts AIFB
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	2513200	Seminar Programming 3 (Bachelor)	2 SWS	Seminar / 🗣	Oberweis, Fritsch, Frister, Forell, Rybinski
WT 24/25	2513214	Seminar Information security and Data protection (Bachelor)	2 SWS	Seminar / 🗣	Volkamer, Raabe, Schiefer, Hennig, Werner, Ullrich
WT 24/25	2513312	Seminar Linked Data and the Semantic Web (Bachelor)	3 SWS	Seminar / 🗣	Käfer, Braun
WT 24/25	2513314	Seminar Real-World Challenges in Data Science and Analytics (Bachelor)	3 SWS	/ 🗣	Hoellig, Käfer, Thoma
WT 24/25	2513315	Seminar Real-World Challenges in Data Science and Analytics (Master)	3 SWS	/ 🗣	Hoellig, Käfer, Thoma
ST 2025	2513308	Seminar Knowledge Discovery and Data Mining (Bachelor)	2 SWS	Seminar / 🗣	Käfer, Noullet, Shao, Kinder
ST 2025	2513310	Seminar Data Science & Real-time Big Data Analytics (Bachelor)	2 SWS	Seminar / 🗣	Käfer, Thoma, Hoellig
ST 2025	2513500	Cognitive Automobiles and Robots	2 SWS	Seminar / 🗣	Schneider, Zöllner, Daaboul
Exams					
WT 24/25	7900038	Seminar Linked Data and the Semantic Web (Bachelor)			Färber
WT 24/25	7900042	Seminar Programming 3 (Bachelor)			Oberweis
WT 24/25	7900121	Security and Privacy Awareness			Volkamer
WT 24/25	7900187	Seminar Real-World Challenges in Data Science and Analytics (Bachelor)			Färber
WT 24/25	7900284	Seminar Information Security and Data Protection (Bachelor)			Oberweis
ST 2025	7900090	Seminar Data Science & Real-time Big Data Analytics (Bachelor)			Käfer
ST 2025	7900094	Seminar Knowledge Discovery and Data Mining (Bachelor)			Käfer
ST 2025	7900265	User-Adaptive Systems Seminar			Mädche

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
Placeholder for seminars offered by the Institute AIFB. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Seminar Programming 3 (Bachelor)** — **Seminar (S) On-Site**
2513200, WS 24/25, 2 SWS, Open in study portal

Content
Registration information and the content of the seminar will be announced on the WIWI-portal. Only bachelor students are allowed to attend this seminar.

V **Seminar Linked Data and the Semantic Web (Bachelor)** — **Seminar (S) On-Site**
2513312, WS 24/25, 3 SWS, Language: German/English, Open in study portal

Content
Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this practical seminar is to build applications and devise algorithms that consume, provide, or analyse Linked Data.

The Linked Data principles are a set of practices for data publishing on the web. Linked Data builds on the web architecture and uses HTTP for data access, and RDF for describing data, thus aiming towards web-scale data integration. There is a vast amount of data available published according to those principles: recently, 4.5 billion facts have been counted with information about various domains, including music, movies, geography, natural sciences. Linked Data is also used to make web-pages machine-understandable, corresponding annotations are considered by the big search engine providers. On a smaller scale, devices on the Internet of Things can also be accessed using Linked Data which makes the unified processing of device data and data from the web easy.

In this practical seminar, students will build prototypical applications and devise algorithms that consume, provide, or analyse Linked Data. Those applications and algorithms can also extend existing applications ranging from databases to mobile apps.

For the seminar, programming skills or knowledge about web development tools/technologies are highly recommended. Basic knowledge of RDF and SPARQL are also recommended, but may be acquired during the seminar. Students will work in groups. Seminar meetings will take place as 'Block-Seminar'.

Topics of interest include, but are not limited to:

- Travel Security
- Geo data
- Linked News
- Social Media

The exact dates and information for registration will be announced at the event page.

V **Seminar Real-World Challenges in Data Science and Analytics (Bachelor)** — **On-Site**
2513314, WS 24/25, 3 SWS, Language: German/English, Open in study portal

Content
In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

The exact dates and information for registration will be announced at the course page.

V **Seminar Real-World Challenges in Data Science and Analytics (Master)** — **On-Site**
2513315, WS 24/25, 3 SWS, Language: German/English, Open in study portal

Content
In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

The exact dates and information for registration will be announced at the course page.

V Seminar Knowledge Discovery and Data Mining (Bachelor)

Seminar (S)
On-Site

2513308, SS 2025, 2 SWS, Language: English, Open in study portal

Content
In this seminar different machine learning and data mining methods are implemented.

The seminar includes different methods of machine learning and data mining. Participants of the seminar should have basic knowledge of machine learning and programming skills.

Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market
- Scientific Publications

Further Information: https://aifb.kit.edu/web/Lehre/Praktikum_Knowledge_Discovery_and_Data_Science

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/ .

Literature
Detaillierte Referenzen werden zusammen mit den jeweiligenThemen 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.

V Seminar Data Science & Real-time Big Data Analytics (Bachelor)

Seminar (S)
On-Site

2513310, SS 2025, 2 SWS, Language: English, Open in study portal

Content
In this seminar, students will design applications in teams that use meaningful and creative Event Processing methods. Thereby, students have access to an existing record.

Event processing and real-time data are everywhere: financial market data, sensors, business intelligence, social media analytics, logistics. Many applications collect large volumes of data in real time and are increasingly faced with the challenge of being able to process them quickly and react promptly. The challenges of this real-time processing are currently also receiving a great deal of attention under the term "Big Data". The complex processing of real-time data requires both knowledge of methods for data analysis (data science) and their processing (real-time analytics). Seminar papers are offered on both of these areas as well as on interface topics, the input of own ideas is explicitly desired.

Further information to the 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
Die Anmeldung erfolgt über das WiWi-Portal https://portal.wiwi.kit.edu/ .

V Cognitive Automobiles and Robots

Seminar (S)
On-Site

2513500, SS 2025, 2 SWS, Language: German/English, Open in study portal

Content
The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

T 3.505 Course: Seminar in Informatics A (Master) [T-WIWI-103479]

Responsible: Professorenschaft des Instituts AIFB
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	2400125	Security and Privacy Awareness	2 SWS	Seminar /	Seidel-Saul, Volkamer, Boehm, Aldag, Veit
WT 24/25	2513105	Seminar Advanced Analytics for Road Traffic Noise (Master)	2 SWS	Seminar /	Lazarova-Molnar, Demetgül
WT 24/25	2513107	Seminar Modeling and Simulation for Energy Systems (Master)	2 SWS	Seminar	Lazarova-Molnar, Mostafa
WT 24/25	2513313	Seminar Linked Data and the Semantic Web (Master)	3 SWS	Seminar /	Käfer, Braun
WT 24/25	2513314	Seminar Real-World Challenges in Data Science and Analytics (Bachelor)	3 SWS	/	Hoellig, Käfer, Thoma
WT 24/25	2513315	Seminar Real-World Challenges in Data Science and Analytics (Master)	3 SWS	/	Hoellig, Käfer, Thoma
WT 24/25	2513451	Seminar Cooperative Autonomous Vehicles (Master)	2 SWS	Seminar /	Vinel
WT 24/25	2513457	Seminar Collective Perception in Autonomous Driving (Master)	2 SWS	Seminar /	Vinel
WT 24/25	2513458	Seminar Artificial Intelligence for Autonomous Driving (Master)	2 SWS	Seminar /	Vinel, Zhao
WT 24/25	2513500	Seminar Cognitive Automobiles and Robots (Master)	2 SWS	Seminar /	Zöllner, Daaboul
WT 24/25	2513607	Seminar Knowledge Graphs and Large Language Models (Master)	2 SWS	Seminar /	Sack, Gesese, Norouzi, Vafaie, Tan
ST 2025	2512101	Seminar: From Physical Models to Digital Twins: A Data-Driven Simulation Workshop (Seminar/ Master)	2 SWS	Seminar /	Lazarova-Molnar, Khodadadi, Mostafa
ST 2025	2513103	Seminar: Applications of Digital Twins (Master)	2 SWS	Seminar /	Lazarova-Molnar, Lee
ST 2025	2513108	Seminar: New Trends in Artificial Intelligence Techniques for Noise Prediction (Master)	2 SWS	Seminar /	Demetgül, Lazarova-Molnar
ST 2025	2513109	Seminar: Agent-based Modeling and Simulation (Master)	2 SWS	Seminar	Lazarova-Molnar, Ghasemi
ST 2025	2513211	Seminar Business Information Systems (Master)	2 SWS	Seminar /	Oberweis, Forell, Frister, Fritsch, Rybinski, Schreiber, Schüler, Ullrich
ST 2025	2513309	Seminar Knowledge Discovery and Data Mining (Master)	2 SWS	Seminar /	Käfer, Noullet, Shao, Kinder
ST 2025	2513311	Seminar Data Science & Real-time Big Data Analytics (Master)	2 SWS	Seminar /	Käfer, Thoma, Hoellig
ST 2025	2513455	Seminar Machine Learning in Autonomous Driving (Master)	2 SWS	Seminar /	Zhao , Vinel
ST 2025	2513459	Seminar Vulnerable Road User Technologies (Master)	2 SWS	Seminar /	Schrapel, Vinel

ST 2025	2513500	Cognitive Automobiles and Robots	2 SWS	Seminar / 🗣	Schneider, Zöllner, Daaboul
ST 2025	2513553	Seminar E-Voting (Master)	2 SWS	Seminar / 🗣	Beckert, Müller-Quade, Volkamer, Kirsten, Hilt, Dörre
ST 2025	2513607	Large Language Model-Enhanced Representation Learning for Knowledge Graphs (Master)	2 SWS	Seminar / 🎲	Sack, Gesese, Tan
Exams					
WT 24/25	7900069	Human-Centered Systems Seminar: Engineering			Mädche
WT 24/25	7900102	Advanced Lab Information Service Engineering (Master)			Sack
WT 24/25	7900119	Seminar Cognitive Automobiles and Robots			Zöllner
WT 24/25	7900121	Security and Privacy Awareness			Volkamer
WT 24/25	7900209	Seminar Digital Twins with Lego: Hands-on Workshop in Data-driven Simulation (Master)			Lazarova-Molnar
WT 24/25	7900215	Seminar Knowledge Graphs and Large Language Models (Master)			Sack
WT 24/25	7900226	Seminar Modeling and Simulation for Energy Systems (Master)			Lazarova-Molnar
WT 24/25	7900233	Human-Centered Systems Seminar: Research			Mädche
WT 24/25	7900236	Seminar Advanced Analytics for Road Traffic Noise (Master)			Lazarova-Molnar
WT 24/25	7900245	Seminar Cooperative Autonomous Vehicles (Master)			Vinel
WT 24/25	7900279	Seminar Collective Perception in Autonomous Driving (Master)			Vinel
WT 24/25	7900304	Seminar Linked Data and the Semantic Web (Master)			Färber
WT 24/25	7900356	Seminar Real-World Challenges in Data Science and Analytics (Master)			Sure-Vetter, Färber
WT 24/25	79AIFB_AIAD_C4	Seminar Artificial Intelligence for Autonomous Driving (Master)			Vinel
ST 2025	7500255	Seminar: E-Voting			Beckert, Müller-Quade
ST 2025	7900088	Seminar Business Information Systems (Master)			Oberweis
ST 2025	7900147	Cognitive Automobiles and Robots			Zöllner
ST 2025	7900162	Seminar: From Physical Models to Digital Twins: A Data-Driven Simulation Workshop (Master)			Lazarova-Molnar
ST 2025	7900190	Human-Centered Systems Seminar: Engineering			Mädche
ST 2025	7900191	Seminar Vulnerable Road User Technologies (Master)			Vinel
ST 2025	7900196	Seminar: Wearables and Machine Learning for Humancentric Digital Twins (Master)			Lazarova-Molnar
ST 2025	7900198	Seminar Data Science & Real-Time Big Data Analytics (Master)			Käfer
ST 2025	7900199	Seminar Large Language Model-Enhanced Representation Learning for Knowledge Graphs (Master)			Sack
ST 2025	7900202	Seminar Knowledge Discovery and Data Mining (Master)			Käfer
ST 2025	7900203	Seminar Machine Learning in Autonomous Driving (Master)			Vinel
ST 2025	7900206	Seminar New Trends in Artificial Intelligence Techniques for Noise Prediction (Master)			Lazarova-Molnar
ST 2025	7900222	Seminar: Agent-based Modeling and Simulation (Master)			Lazarova-Molnar
ST 2025	7900261	Human-Centered Systems Seminar: Research			Mädche
ST 2025	7900305	Seminar: Applications of Digital Twins (Master)			Lazarova-Molnar
ST 2025	7900370	ABBA Summer School Seminar: Biosignal-Adaptive GenAI Systems			Mädche

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
Placeholder for seminars offered by the Institute AIFB.

Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Security and Privacy Awareness** — **Seminar (S)**, **Blended (On-Site/Online)**
2400125, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Content
Within the framework of this interdisciplinary seminar, the topics security awareness and privacy awareness are to be considered from different perspectives. It deals with legal, information technology, psychological, social as well as philosophical aspects.

Important notes:

- Consider that legal-focused topics require you to speak and understand German legal texts
- The seminar is only for MASTER students (or Mastervorzug)
- The link to enrol is for every student, regardless of the study background

Dates (not final):

- Kick-Off: Tue, 22.10.2024, 11:30 Uhr, Raum 1C-03, Gebäude 5.20
- First version: 05.01.2025
- Final version: 23.02.2025
- Presentation: CW 12

Topics:

The advertised topics can be found in the wiwi portal [https://portal.wiwi.kit.edu/ys/8308]. They will be assigned after the kick-off.

V **Seminar Advanced Analytics for Road Traffic Noise (Master)** — **Seminar (S)**, **On-Site**
2513105, WS 24/25, 2 SWS, Language: English, Open in study portal

Content
Road traffic noise (RTN) stands as a significant environmental pollutant encountered in daily life, profoundly impacting human health. Extensive research has empirically validated its detrimental effects on well-being, encompassing cardiovascular and mental health implications (Stansfeld et al., 2021; Lan et al., 2020). Moreover, regulatory bodies have proposed guidelines and regulations (WHO, 2018; EU, 2019) to mitigate environmental noise exposure, prompting stakeholders like vehicle manufacturers to integrate measures addressing road traffic noise into their design frameworks.

In this seminar, we diverge from the regulatory perspective on RTN and instead delve into its comprehension through data analytics and other techniques. Specifically, we present a guideline for understanding this societal concern and discuss existing road traffic noise modeling (RTNM) approaches, in particular, their formulation and considerations.

Topics:

1. Introduction to RTN
2. Overview on RTNM
3. Time series analysis
4. Data exploration and visualization
5. Machine learning for RTNM
6. Sound feature extraction and analysis

Literature

- Stansfeld, S., Clark, C., Smuk, M., Gallacher, J., & Babisch, W. (2021). Road traffic noise, noise sensitivity, noise annoyance, psychological and physical health and mortality. Environmental Health, 20, 1-15.
- Lan, Y., Roberts, H., Kwan, M. P., & Helbich, M. (2020). Transportation noise exposure and anxiety: A systematic review and meta-analysis. Environmental research, 191, 110118.
- WHO. (2018) Environmental Noise Guidelines for the European Region.
- EU. (2019) Regulation (EU) No 540/2014 of the European Parliament and of the Council of 16 April 2014 on the Sound Level of Motor Vehicles and of Replacement Silencing Systems, and Amending Directive 2007/46/EC and Repealing Directive 70/157/EEC.

V Seminar Linked Data and the Semantic Web (Master)

2513313, WS 24/25, 3 SWS, Language: German/English, Open in study portal

Seminar (S)
On-Site

Content
Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this practical seminar is to build applications and devise algorithms that consume, provide, or analyse Linked Data.

The Linked Data principles are a set of practices for data publishing on the web. Linked Data builds on the web architecture and uses HTTP for data access, and RDF for describing data, thus aiming towards web-scale data integration. There is a vast amount of data available published according to those principles: recently, 4.5 billion facts have been counted with information about various domains, including music, movies, geography, natural sciences. Linked Data is also used to make web-pages machine-understandable, corresponding annotations are considered by the big search engine providers. On a smaller scale, devices on the Internet of Things can also be accessed using Linked Data which makes the unified processing of device data and data from the web easy.

In this practical seminar, students will build prototypical applications and devise algorithms that consume, provide, or analyse Linked Data. Those applications and algorithms can also extend existing applications ranging from databases to mobile apps.

For the seminar, programming skills or knowledge about web development tools/technologies are highly recommended. Basic knowledge of RDF and SPARQL are also recommended, but may be acquired during the seminar. Students will work in groups. Seminar meetings will take place as 'Block-Seminar'.

Topics of interest include, but are not limited to:

- Travel Security
- Geo data
- Linked News
- Social Media

The exact dates and information for registration will be announced at the event page.

V Seminar Real-World Challenges in Data Science and Analytics (Bachelor)

2513314, WS 24/25, 3 SWS, Language: German/English, Open in study portal

On-Site

Content
In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

The exact dates and information for registration will be announced at the course page.

V Seminar Real-World Challenges in Data Science and Analytics (Master)

2513315, WS 24/25, 3 SWS, Language: German/English, Open in study portal

On-Site

Content
In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

The exact dates and information for registration will be announced at the course page.

V

Seminar Cognitive Automobiles and Robots (Master)

2513500, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

V

Seminar Knowledge Graphs and Large Language Models (Master)

2513607, WS 24/25, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Large language models (LLMs) such as GPT-3 have shown remarkable capabilities in transforming various natural language processing (NLP) tasks across different domains. However, LLMs often generate incorrect answers, known as hallucinations, posing significant challenges to their usability and reliability. Additionally, LLMs operate as black boxes, making it difficult to understand how they arrive at specific conclusions, leading to transparency and explainability issues. Combining LLMs with KGs creates a powerful synergy that significantly enhances the capabilities of artificial intelligence across various tasks. This integration leverages the strengths of both technologies, with LLMs excelling at understanding and generating human-like text, and KGs providing structured, reliable information about entities and their relationships. Together, they offer a robust approach to problem-solving across diverse domains.

This seminar will focus on the intersection of LLMs and KGs, covering areas of interest including, but not limited to:

- KG completion using LLMs
- Question answering with KGs and LLMs
- Explainability of LLMs with KG integration
- Reasoning with LLMs and KGs
- Enhanced prompt engineering using KGs

Contributions of the students:

Each student will be assigned one paper on the topic, which could be a research paper discussing a novel approach or a resource paper presenting datasets, tools, etc. The student will be responsible for the following tasks:

1. **Report Writing**: Read the assigned paper thoroughly and write a 15-page seminar report explaining the methods and findings in their own words.
2. **Presenting**: Prepare and deliver a seminar presentation to share insights from the paper with other seminar participants.
3. **Conducting Experiments**: If the authors provide code, re-implement it for small-scale experiments using Google Colab or make the implementation available via GitHub.

V **Seminar: From Physical Models to Digital Twins: A Data-Driven Simulation Workshop (Seminar/Master)** **Seminar (S) On-Site**
2512101, SS 2025, 2 SWS, Language: English, Open in study portal

Content
This seminar focuses on the data-driven discovery of simulation models in industrial settings, providing a hands-on approach to understanding and optimizing production processes.
Students will start by designing and constructing production lines using Lego Spike and similar modular systems. This activity will include developing comprehensive data-capturing pipelines to collect detailed event-logging raw data from their production lines.
Next, the seminar will explore advanced techniques for transforming this raw data into simulation models, e.g., Petri nets. Participants will learn and apply data-driven model extraction methods, such as process mining to extract workflow processes; statistical methods to fit probability distributions and analyze trends, and machine learning algorithms to model complex behaviors within the production process. Through these techniques, students will extract simulation models that reflect the real-world dynamics of their production lines. The seminar will then guide participants on how to validate the extracted simulation models to ensure their accuracy.
By the end of the seminar, students will be equipped with the skills to build model production lines, collect event logging data from them, transform event log data into actionable simulation models and use these models to drive efficiency and innovation in industrial production settings.

Grading Scheme:

Report - 50%

Presentations - 40%

Implementation - 10%

V **Seminar: Applications of Digital Twins (Master)** **Seminar (S) On-Site**
2513103, SS 2025, 2 SWS, Language: English, Open in study portal

Content

Seminar Name: Applications of Digital Twins

Size: 10 students (with 10 different topics)

Workload:

- 2 Lectures:
  - Introduction to Digital Twins and topic distribution
  - "How to Give Effective Presentations" lecture
- 10 student presentations (each 45 minutes in total)
- 10 student reports

Responsible Person: Hui Min Lee, Sanja Lazarova-Molnar

Deliverables for Grade:

- 1 Report per student and topic (8 pages, including references, IEEE Template, compulsory usage of Reference Manager – Zotero or EndNote)
- 25 mins presentation per student plus 20 min discussion (focus on the presentation topic + presentation skills) = 45 minutes for each student

Credits: 3 credits = 90 hours

Format/ Structure of the Seminar (Draft):

- 2 Lectures at the beginning of the semester
- Students have 1 week time to provide a priority list of 5 topics, distribution will be decided based on first come – first serve, ensuring that core topics are covered
- Q&As can be asked and answered over mails or ad-hoc appointments
- Students have time to work on the report and presentation during the semester
- Submission of all reports will be required 2 months after the intro lecture for ensuring fairness
- Presentations are done in blocks of 2 students per class, starting mid-June, presentations will be submitted at the day of the scheduled presentation

Approximate Time Consumption for Students (Draft):

- Lectures: 3 hours
- Student Presentations: 7.5 hours
- Topic Subscription: 1 hour
- Presentation Preparation: 15 hours
- Paper Writing and Literature Review: 63.5 hours

Description:

The seminar focuses on applications of Digital Twins and data-driven modeling, with an additional goal of improving scientific research and presentation skills for Master students. The seminar covers the diverse applications and use cases of Digital Twins in different domains such as manufacturing, energy systems, healthcare and many more, offering students an in-depth understanding of the role of Digital Twins in transforming the industries.

The seminar is structured as a literature review seminar. Each student can select a topic out of a predefined set, conduct further research and then write a comprehensive research paper. Students will also deliver presentations, synthesizing insights from both the provided starting reference literature and their own additional research.

By the end of the course, students will not only have a solid understanding of the current applications of Digital Twins and emerging trends but also be well-prepared to present their findings in an academic setting.

Topics:

1. **Digital Twins for Manufacturing Systems**

References:

- Zhang, Chenyuan, et al. "A reconfigurable modeling approach for digital twin-based manufacturing system." *Procedia Cirp* 83 (2019): 118-125. (96 citations)
- Kritzinger, Werner, et al. "Digital Twin in manufacturing: A categorical literature review and classification." *Ifac-PapersOnline* 51.11 (2018): 1016-1022. (1934 citations)
- Jaensch, Florian, et al. "Digital twins of manufacturing systems as a base for machine learning." *2018 25th International conference on mechatronics and machine vision in practice (M2VIP)*. IEEE, 2018. (73 citations)

2. Digital Twins for Energy Systems

References:

- Steindl, Gernot, et al. "Generic digital twin architecture for industrial energy systems." *Applied Sciences* 10.24 (2020): 8903. (78 citations)
- Granacher, Julia, et al. "Overcoming decision paralysis—A digital twin for decision making in energy system design." *Applied Energy* 306 (2022): 117954. (33 citations) -> focus on interactive digital twins
- Palensky, Peter, et al. "Digital twins and their use in future power systems." *Digital Twin* 1 (2022): 4. (37 citations)

3. Digital Twins in Healthcare

References:

- Alazab, Mamoun, et al. "Digital twins for healthcare 4.0-recent advances, architecture, and open challenges." *IEEE Consumer Electronics Magazine* (2022). (26 citations)
- Croatti, Angelo, et al. "On the integration of agents and digital twins in healthcare." *Journal of Medical Systems* 44 (2020): 1-8. (163 citations)
- Erol, Tolga, Arif Furkan Mendi, and Dilara Doğan. "The digital twin revolution in healthcare." *2020 4th international symposium on multidisciplinary studies and innovative technologies (ISMSIT)*. IEEE, 2020. (106 citations)

4. Digital Twins of City Infrastructures (in Smart Cities)

References:

- Deren, Li, Yu Wenbo, and Shao Zhenfeng. "Smart city based on digital twins." *Computational Urban Science* 1 (2021): 1-11. (110 citations)
- Deng, Tianhu, Keren Zhang, and Zuo-Jun Max Shen. "A systematic review of a digital twin city: A new pattern of urban governance toward smart cities." *Journal of Management Science and Engineering* 6.2 (2021): 125-134. (192 citations)
- Mylonas, Georgios, et al. "Digital twins from smart manufacturing to smart cities: A survey." *Ieee Access* 9 (2021): 143222-143249. (99 citations)

5. Digital Twins in Logistics

References:

- Moshood, Taofeeq D., et al. "Digital twins driven supply chain visibility within logistics: A new paradigm for future logistics." *Applied System Innovation* 4.2 (2021): 29. (71 citations)
- Agalianos, K., et al. "Discrete event simulation and digital twins: review and challenges for logistics." *Procedia Manufacturing* 51 (2020): 1636-1641. (74 citations)
- Korth, Benjamin, Christian Schwede, and Markus Zajac. "Simulation-ready digital twin for realtime management of logistics systems." *2018 IEEE international conference on big data (big data)*. IEEE, 2018. (64 citations)

6. Cognitive Digital Twins

References:

- Al Faruque, Mohammad Abdullah, et al. "Cognitive digital twin for manufacturing systems." *2021 Design, Automation & Test in Europe Conference & Exhibition (DATE)*. IEEE, 2021. (28 citations)
- Zhang, Nan, Rami Bahsoon, and Georgios Theodoropoulos. "Towards engineering cognitive digital twins with self-awareness." *2020 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*. IEEE, 2020. (22 citations)
- Zheng, Xiaochen, Jinzhi Lu, and Dimitris Kiritsis. "The emergence of cognitive digital twin: vision, challenges and opportunities." *International Journal of Production Research* 60.24 (2022): 7610-7632. (92 citations)

7. Fusing Data and Human Expert Knowledge in Digital Twins

References:

- Kulkarni, Vinay, Souvik Barat, and Tony Clark. "Towards adaptive enterprises using digital twins." *2019 winter simulation conference (WSC)*. IEEE, 2019. (22 citations)
- Vogel-Heuser, Birgit, et al. "Potential for combining semantics and data analysis in the context of digital twins." *Philosophical Transactions of the Royal Society A* 379.2207 (2021): 20200368. (16 citations)
- Todorovski, Ljupčo, and Sašo Džeroski. "Integrating knowledge-driven and data-driven approaches to modeling." *ecological modelling* 194.1-3 (2006): 3-13. (80 citations)

8. Digital Twins for Multi-agent / Complex Systems

References:

- Pretel, Elena, Alejandro Moya, Elena Navarro, Víctor López-Jaquero, and Pascual González. "Analysing the synergies between Multi-agent Systems and Digital Twins: A systematic literature review." *Information and Software Technology* (2024): 107503. (2 citations)
- Mariani, S., Picone, M., Ricci, A. (2022). About Digital Twins, Agents, and Multiagent Systems: A Cross-Fertilisation Journey. In: Melo, F.S., Fang, F. (eds) *Autonomous Agents and Multiagent Systems. Best and Visionary Papers. AAMAS 2022*. Lecture Notes in Computer Science, vol 13441. (11 citations)
- Marah H, Challenger M. Adaptive hybrid reasoning for agent-based digital twins of distributed multi-robot systems. *SIMULATION.* 2024;100(9):931-957. (0 citations – new articles)

9. Digital Twins for Energy Systems

References:

- Kabir, Md Rafiul, Dipal Halder, and Sandip Ray. "Digital Twins for IoT-driven Energy Systems: A Survey." *IEEE Access* (2024). (0 citations – new articles)
- Brosinsky, Christoph, Rainer Krebs, and Dirk Westermann. "Embedded Digital Twins in future energy management systems: paving the way for automated grid control." *at-Automatisierungstechnik* 68, no. 9 (2020): 750-764.(21 citations)
- Song, Zhao, Christoph M. Hackl, Abhinav Anand, Andre Thommessen, Jonas Petzschmann, Omar Kamel, Robert Braunbehrens, Anton Kaifel, Christian Roos, and Stefan Hauptmann. "Digital twins for the future power system: An overview and a future perspective." *Sustainability* 15, no. 6 (2023): 5259. .(32 citations)
- Mostafa, Omar & Lazarova-Molnar, Sanja. (2024). Enhancing Reliability of Energy Systems with Digital Twins: Challenges and Opportunities. (0 citations – new articles)

10. Digital Twins in Transportation and Automotive

References:

- Schwarz, Chris, and Ziran Wang. "The role of digital twins in connected and automated vehicles." *IEEE Intelligent Transportation Systems Magazine* 14, no. 6 (2022): 41-51. (91 citations)
- Bhatti, Ghanishtha, Harshit Mohan, and R. Raja Singh. "Towards the future of smart electric vehicles: Digital twin technology." *Renewable and Sustainable Energy Reviews* 141 (2021): 110801. (422 citations)
- Almeaibed, Sadeq, Saba Al-Rubaye, Antonios Tsourdos, and Nicolas P. Avdelidis. "Digital twin analysis to promote safety and security in autonomous vehicles." *IEEE Communications Standards Magazine* 5, no. 1 (2021): 40-46. (135 citations)

11. Digital Twins for Environment and Sustainability

References:

- Tzachor, Asaf, Soheil Sabri, Catherine E. Richards, Abbas Rajabifard, and Michele Acuto. "Potential and limitations of digital twins to achieve the sustainable development goals." *Nature Sustainability* 5, no. 10 (2022): 822-829. (110 citations)
- Corrado, Casey R., Suzanne M. DeLong, Emily G. Holt, Edward Y. Hua, and Andreas Tolk. "Combining green metrics and digital twins for sustainability planning and governance of smart buildings and cities." *Sustainability* 14, no. 20 (2022): 12988. (36 citations)
- Kim, Byungmo, Jaewon Oh, and Cheonhong Min. "Development of a simulation model for digital twin of an oscillating water column wave power generator structure with ocean environmental effect." *Sensors* 23, no. 23 (2023): 9472. (3 citations)

12. Digital Twins in Agriculture

References:

- Peladarinos, Nikolaos, Dimitrios Piromalis, Vasileios Cheimaras, Efthymios Tserepas, Radu Adrian Munteanu, and Panagiotis Papageorgas. "Enhancing smart agriculture by implementing digital twins: A comprehensive review." *Sensors* 23, no. 16 (2023): 7128. (60 citations)
- Escribà-Gelonch, Marc, Shu Liang, Pieter van Schalkwyk, Ian Fisk, Nguyen Van Duc Long, and Volker Hessel. "Digital Twins in Agriculture: Orchestration and Applications." *Journal of Agricultural and Food Chemistry* 72, no. 19 (2024): 10737-10752. (12 citations)
- Verdouw, Cor, Bedir Tekinerdogan, Adrie Beulens, and Sjaak Wolfert. "Digital twins in smart farming." *Agricultural Systems* 189 (2021): 103046. (494 citations)

V **Seminar: New Trends in Artificial Intelligence Techniques for Noise Prediction (Master)** **Seminar (S) On-Site**

2513108, SS 2025, 2 SWS, Language: English, Open in study portal

Content
Noise, especially in urban areas, is a major environmental issue that impacts quality of life and health, contributing to stress, sleep disturbances, and cardiovascular problems. Traffic noise, primarily from tire-road interactions, has become more prominent as electric vehicles reduce engine noise. Tackling this issue involves both passive methods, like noise barriers, and active solutions such as noise cancellation technologies.

In recent years, artificial intelligence (AI) has emerged as a powerful tool for managing noise. AI-based systems can classify noise sources, create noise maps, and develop control strategies. Advanced AI techniques, including Generative Adversarial Networks (GANs), AutoEncoders, Bi-Long Short-Term Memory (LSTM), and Bi-Gated Recurrent Units (GRUs), Graphical Convolutional Networks (GCN), Physics-informed neural networks, YOLO, Transformer, show great potential for reducing noise. Additionally, many computer vision techniques are used to improve noise conditions. This seminar will explore these AI methods and their role in enhancing conditions safety, minimizing environmental noise, and supporting intelligent transportation systems.

In this seminar, we try to understand Noise through data analysis and other techniques. We discuss current approaches to noise prediction and innovative AI approaches based on data science and machine learning.

Topics:

Introduction to Noise and Tire-Road Noise

Overview on Noise and Tire-Road Noise

Time Series Analysis and Image Analysis

Data Exploration and Visualization

Noise Feature Extraction and Analysis

Machine learning and Deep Learning Approach for Tire-Road Noise

Who are we looking for:

We are looking for students who want to expand their specialist knowledge and practical experience in artificial intelligence, signal processing, computer vision and road-tire noise. Participation provides the opportunity to actively participate in shaping the future of using artificial intelligence, computer vision and signal processing to reduce road-tire and traffic noise.

What we offer:

We provide you with tyre-road noise data. With this data, you can apply many signal processing, computer vision and artificial intelligence algorithms. This is where you can let your creativity run free and implement innovative solutions with our guidance.

Organizational:

- Kickoff meeting **on April 24, 2025**: Introduction to topics, information about data, clarification of organizational questions. In the Kickoff Meeting, Groups come together and each group has a theme.
- Interim presentation **29 May 2025**: Presentation of the current situation and information sharing.
- Final presentation on **July 17, 2025**: Presentation of results and submission of documents

Registration: Please briefly state your motivation for taking this course. Optionally you can attach your Transcript of Records and CV.

Deliverables (per team): 1 Report (min 10 pages, scientific paper format, including references) + Presentations (2) + Implementation Files(codes)

Grading relevant Parts: Written Report, Presentations and Implementation

V **Seminar Knowledge Discovery and Data Mining (Master)** **Seminar (S) On-Site**
2513309, SS 2025, 2 SWS, Language: English, Open in study portal

Content
In this seminar different machine learning and data mining methods are implemented.

The seminar includes different methods of machine learning and data mining. Participants of the seminar should have basic knowledge of machine learning and programming skills.

Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market
- Scientific Publications

Further Information: https://aifb.kit.edu/web/Lehre/Praktikum_Knowledge_Discovery_and_Data_Science

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/ .

Literature
Detaillierte Referenzen werden zusammen mit den jeweiligenThemen 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.

V Seminar Data Science & Real-time Big Data Analytics (Master)

Seminar (S)
On-Site

2513311, SS 2025, 2 SWS, Language: English, Open in study portal

Content
In this seminar, students will design applications in teams that use meaningful and creative Event Processing methods. Thereby, students have access to an existing record.

Event processing and real-time data are everywhere: financial market data, sensors, business intelligence, social media analytics, logistics. Many applications collect large volumes of data in real time and are increasingly faced with the challenge of being able to process them quickly and react promptly. The challenges of this real-time processing are currently also receiving a great deal of attention under the term "Big Data". The complex processing of real-time data requires both knowledge of methods for data analysis (data science) and their processing (real-time analytics). Seminar papers are offered on both of these areas as well as on interface topics, the input of own ideas is explicitly desired.

Further information to the practical seminar is given under the following Link:
http://seminar-cep.fzi.de

Questions are answered via the e-mail address sem-ep@fzi.de.

Organizational issues
Die Anmeldung erfolgt über das WiWi-Portal https://portal.wiwi.kit.edu/ .

V Cognitive Automobiles and Robots

Seminar (S)
On-Site

2513500, SS 2025, 2 SWS, Language: German/English, Open in study portal

Content
The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

V Seminar E-Voting (Master)

Seminar (S)
On-Site

2513553, SS 2025, 2 SWS, Language: German/English, Open in study portal

Content
What should a voting procedure fulfill? When is a voting procedure secure? Which components need to be examined? Which methods can be used to investigate this?

Cryptographic voting procedures and algorithmic voting (counting) procedures are examined from different perspectives (cryptographic methods, formal correctness, human factors).

This course can also be credited for the KASTEL certificate. Further information about obtaining the certificate can be found on the SECUSO website (https://secuso.aifb.kit.edu/Studium_und_Lehre.php).

Organizational issues
Die Anmeldung für das Seminar ist bis zum 20. April über https://portal.wiwi.kit.edu/ys/8668 möglich.

V

Large Language Model-Enhanced Representation Learning for Knowledge Graphs (Master)
2513607, SS 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Effective feature representation is critical for optimizing the performances of machine learning algorithms. Recently, Representation Learning (RL) has advanced significantly, focusing on embedding words and Knowledge Graphs (KGs) into low-dimensional vector spaces. Word embeddings encode words as vectors, capturing context, semantic similarity, and relationships. Similarly, KG representation learning (KGRL) algorithms (a.k.a. KG embedding (KGE) models) are used to represent entities and relations as vectors in a low-dimensional vector space, preserving structure and semantic connections.

KGE models can be unimodal, using a single source of information, or multimodal, integrating multiple sources such as relations between entities, text literals, numeric literals, images, etc. Capturing information from these sources ensures semantically rich representations. Multimodal KGE models either create separate representations for each source in non-unified spaces or a unified representation for KG elements. These embeddings are commonly used for KG completion tasks such as link prediction and entity classification.

Emerging methodologies for KGRL leverage LLMs such as LLaMA, GPT 3.5, and PaLM2. The integration of LLMs with KG KGRL signifies a pivotal advancement in the field of artificial intelligence, enhancing the ability to capture and utilize complex knowledge structures.

In this seminar, we aim to explore state-of-the-art approaches that utilize LLMs for Knowledge Graph representation learning.

Contributions of the students:

Each student will be assigned one paper on the topic, which could be a research paper discussing a novel approach or a resource paper presenting datasets, tools, etc. The student will be responsible for the following tasks:

1. **Report Writing**: Read the assigned paper thoroughly and write a 15-page seminar report explaining the methods and findings in their own words.
2. **Presenting**: Prepare and deliver a seminar presentation to share insights from the paper with other seminar participants.
3. **Conducting Experiments**: If the authors provide code, re-implement it for small-scale experiments using Google Colab or make the implementation available via GitHub.

T 3.506 Course: Seminar in Informatics B (Master) [T-WIWI-103480]

Responsible: Professorenschaft des Instituts AIFB
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	2400125	Security and Privacy Awareness	2 SWS	Seminar /	Seidel-Saul, Volkamer, Boehm, Aldag, Veit
WT 24/25	2513105	Seminar Advanced Analytics for Road Traffic Noise (Master)	2 SWS	Seminar /	Lazarova-Molnar, Demetgül
WT 24/25	2513107	Seminar Modeling and Simulation for Energy Systems (Master)	2 SWS	Seminar	Lazarova-Molnar, Mostafa
WT 24/25	2513313	Seminar Linked Data and the Semantic Web (Master)	3 SWS	Seminar /	Käfer, Braun
WT 24/25	2513314	Seminar Real-World Challenges in Data Science and Analytics (Bachelor)	3 SWS	/	Hoellig, Käfer, Thoma
WT 24/25	2513315	Seminar Real-World Challenges in Data Science and Analytics (Master)	3 SWS	/	Hoellig, Käfer, Thoma
WT 24/25	2513451	Seminar Cooperative Autonomous Vehicles (Master)	2 SWS	Seminar /	Vinel
WT 24/25	2513457	Seminar Collective Perception in Autonomous Driving (Master)	2 SWS	Seminar /	Vinel
WT 24/25	2513458	Seminar Artificial Intelligence for Autonomous Driving (Master)	2 SWS	Seminar /	Vinel, Zhao
WT 24/25	2513500	Seminar Cognitive Automobiles and Robots (Master)	2 SWS	Seminar /	Zöllner, Daaboul
WT 24/25	2513607	Seminar Knowledge Graphs and Large Language Models (Master)	2 SWS	Seminar /	Sack, Gesese, Norouzi, Vafaie, Tan
ST 2025	2512101	Seminar: From Physical Models to Digital Twins: A Data-Driven Simulation Workshop (Seminar/ Master)	2 SWS	Seminar /	Lazarova-Molnar, Khodadadi, Mostafa
ST 2025	2513103	Seminar: Applications of Digital Twins (Master)	2 SWS	Seminar /	Lazarova-Molnar, Lee
ST 2025	2513108	Seminar: New Trends in Artificial Intelligence Techniques for Noise Prediction (Master)	2 SWS	Seminar /	Demetgül, Lazarova-Molnar
ST 2025	2513109	Seminar: Agent-based Modeling and Simulation (Master)	2 SWS	Seminar	Lazarova-Molnar, Ghasemi
ST 2025	2513211	Seminar Business Information Systems (Master)	2 SWS	Seminar /	Oberweis, Forell, Frister, Fritsch, Rybinski, Schreiber, Schüler, Ullrich
ST 2025	2513309	Seminar Knowledge Discovery and Data Mining (Master)	2 SWS	Seminar /	Käfer, Noullet, Shao, Kinder
ST 2025	2513311	Seminar Data Science & Real-time Big Data Analytics (Master)	2 SWS	Seminar /	Käfer, Thoma, Hoellig
ST 2025	2513455	Seminar Machine Learning in Autonomous Driving (Master)	2 SWS	Seminar /	Zhao , Vinel
ST 2025	2513459	Seminar Vulnerable Road User Technologies (Master)	2 SWS	Seminar /	Schrapel, Vinel

ST 2025	2513500	Cognitive Automobiles and Robots	2 SWS	Seminar / 🗣	Schneider, Zöllner, Daaboul
ST 2025	2513553	Seminar E-Voting (Master)	2 SWS	Seminar / 🗣	Beckert, Müller-Quade, Volkamer, Kirsten, Hilt, Dörre
ST 2025	2513607	Large Language Model-Enhanced Representation Learning for Knowledge Graphs (Master)	2 SWS	Seminar / 🎲	Sack, Gesese, Tan
Exams					
WT 24/25	7500175	Seminar: Energy Informatics			Hagenmeyer, Bläsius
WT 24/25	7500220	Seminar Ubiquitous Computing			Beigl
WT 24/25	7900102	Advanced Lab Information Service Engineering (Master)			Sack
WT 24/25	7900119	Seminar Cognitive Automobiles and Robots			Zöllner
WT 24/25	7900121	Security and Privacy Awareness			Volkamer
WT 24/25	7900209	Seminar Digital Twins with Lego: Hands-on Workshop in Data-driven Simulation (Master)			Lazarova-Molnar
WT 24/25	7900215	Seminar Knowledge Graphs and Large Language Models (Master)			Sack
WT 24/25	7900226	Seminar Modeling and Simulation for Energy Systems (Master)			Lazarova-Molnar
WT 24/25	7900236	Seminar Advanced Analytics for Road Traffic Noise (Master)			Lazarova-Molnar
WT 24/25	7900245	Seminar Cooperative Autonomous Vehicles (Master)			Vinel
WT 24/25	7900279	Seminar Collective Perception in Autonomous Driving (Master)			Vinel
WT 24/25	7900304	Seminar Linked Data and the Semantic Web (Master)			Färber
WT 24/25	7900356	Seminar Real-World Challenges in Data Science and Analytics (Master)			Sure-Vetter, Färber
WT 24/25	79AIFB_AIAD_C4	Seminar Artificial Intelligence for Autonomous Driving (Master)			Vinel
ST 2025	7500255	Seminar: E-Voting			Beckert, Müller-Quade
ST 2025	7900088	Seminar Business Information Systems (Master)			Oberweis
ST 2025	7900147	Cognitive Automobiles and Robots			Zöllner
ST 2025	7900162	Seminar: From Physical Models to Digital Twins: A Data-Driven Simulation Workshop (Master)			Lazarova-Molnar
ST 2025	7900191	Seminar Vulnerable Road User Technologies (Master)			Vinel
ST 2025	7900196	Seminar: Wearables and Machine Learning for Humancentric Digital Twins (Master)			Lazarova-Molnar
ST 2025	7900198	Seminar Data Science & Real-Time Big Data Analytics (Master)			Käfer
ST 2025	7900199	Seminar Large Language Model-Enhanced Representation Learning for Knowledge Graphs (Master)			Sack
ST 2025	7900202	Seminar Knowledge Discovery and Data Mining (Master)			Käfer
ST 2025	7900203	Seminar Machine Learning in Autonomous Driving (Master)			Vinel
ST 2025	7900206	Seminar New Trends in Artificial Intelligence Techniques for Noise Prediction (Master)			Lazarova-Molnar
ST 2025	7900222	Seminar: Agent-based Modeling and Simulation (Master)			Lazarova-Molnar
ST 2025	7900305	Seminar: Applications of Digital Twins (Master)			Lazarova-Molnar

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Security and Privacy Awareness** — **Seminar (S)**, **Blended (On-Site/Online)**
2400125, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Content
Within the framework of this interdisciplinary seminar, the topics security awareness and privacy awareness are to be considered from different perspectives. It deals with legal, information technology, psychological, social as well as philosophical aspects.

Important notes:

- Consider that legal-focused topics require you to speak and understand German legal texts
- The seminar is only for MASTER students (or Mastervorzug)
- The link to enrol is for every student, regardless of the study background

Dates (not final):

- Kick-Off: Tue, 22.10.2024, 11:30 Uhr, Raum 1C-03, Gebäude 5.20
- First version: 05.01.2025
- Final version: 23.02.2025
- Presentation: CW 12

Topics:

The advertised topics can be found in the wiwi portal [https://portal.wiwi.kit.edu/ys/8308]. They will be assigned after the kick-off.

V **Seminar Advanced Analytics for Road Traffic Noise (Master)** — **Seminar (S)**, **On-Site**
2513105, WS 24/25, 2 SWS, Language: English, Open in study portal

Content
Road traffic noise (RTN) stands as a significant environmental pollutant encountered in daily life, profoundly impacting human health. Extensive research has empirically validated its detrimental effects on well-being, encompassing cardiovascular and mental health implications (Stansfeld et al., 2021; Lan et al., 2020). Moreover, regulatory bodies have proposed guidelines and regulations (WHO, 2018; EU, 2019) to mitigate environmental noise exposure, prompting stakeholders like vehicle manufacturers to integrate measures addressing road traffic noise into their design frameworks.

In this seminar, we diverge from the regulatory perspective on RTN and instead delve into its comprehension through data analytics and other techniques. Specifically, we present a guideline for understanding this societal concern and discuss existing road traffic noise modeling (RTNM) approaches, in particular, their formulation and considerations.

Topics:

1. Introduction to RTN
2. Overview on RTNM
3. Time series analysis
4. Data exploration and visualization
5. Machine learning for RTNM
6. Sound feature extraction and analysis

Literature

- Stansfeld, S., Clark, C., Smuk, M., Gallacher, J., & Babisch, W. (2021). Road traffic noise, noise sensitivity, noise annoyance, psychological and physical health and mortality. Environmental Health, 20, 1-15.
- Lan, Y., Roberts, H., Kwan, M. P., & Helbich, M. (2020). Transportation noise exposure and anxiety: A systematic review and meta-analysis. Environmental research, 191, 110118.
- WHO. (2018) Environmental Noise Guidelines for the European Region.
- EU. (2019) Regulation (EU) No 540/2014 of the European Parliament and of the Council of 16 April 2014 on the Sound Level of Motor Vehicles and of Replacement Silencing Systems, and Amending Directive 2007/46/EC and Repealing Directive 70/157/EEC.

V Seminar Linked Data and the Semantic Web (Master)

2513313, WS 24/25, 3 SWS, Language: German/English, Open in study portal

Seminar (S)
On-Site

Content
Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this practical seminar is to build applications and devise algorithms that consume, provide, or analyse Linked Data.

The Linked Data principles are a set of practices for data publishing on the web. Linked Data builds on the web architecture and uses HTTP for data access, and RDF for describing data, thus aiming towards web-scale data integration. There is a vast amount of data available published according to those principles: recently, 4.5 billion facts have been counted with information about various domains, including music, movies, geography, natural sciences. Linked Data is also used to make web-pages machine-understandable, corresponding annotations are considered by the big search engine providers. On a smaller scale, devices on the Internet of Things can also be accessed using Linked Data which makes the unified processing of device data and data from the web easy.

In this practical seminar, students will build prototypical applications and devise algorithms that consume, provide, or analyse Linked Data. Those applications and algorithms can also extend existing applications ranging from databases to mobile apps.

For the seminar, programming skills or knowledge about web development tools/technologies are highly recommended. Basic knowledge of RDF and SPARQL are also recommended, but may be acquired during the seminar. Students will work in groups. Seminar meetings will take place as 'Block-Seminar'.

Topics of interest include, but are not limited to:

- Travel Security
- Geo data
- Linked News
- Social Media

The exact dates and information for registration will be announced at the event page.

V Seminar Real-World Challenges in Data Science and Analytics (Bachelor)

2513314, WS 24/25, 3 SWS, Language: German/English, Open in study portal

On-Site

Content
In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

The exact dates and information for registration will be announced at the course page.

V Seminar Real-World Challenges in Data Science and Analytics (Master)

2513315, WS 24/25, 3 SWS, Language: German/English, Open in study portal

On-Site

Content
In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

The exact dates and information for registration will be announced at the course page.

V

Seminar Cognitive Automobiles and Robots (Master)

2513500, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

V

Seminar Knowledge Graphs and Large Language Models (Master)

2513607, WS 24/25, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Large language models (LLMs) such as GPT-3 have shown remarkable capabilities in transforming various natural language processing (NLP) tasks across different domains. However, LLMs often generate incorrect answers, known as hallucinations, posing significant challenges to their usability and reliability. Additionally, LLMs operate as black boxes, making it difficult to understand how they arrive at specific conclusions, leading to transparency and explainability issues. Combining LLMs with KGs creates a powerful synergy that significantly enhances the capabilities of artificial intelligence across various tasks. This integration leverages the strengths of both technologies, with LLMs excelling at understanding and generating human-like text, and KGs providing structured, reliable information about entities and their relationships. Together, they offer a robust approach to problem-solving across diverse domains.

This seminar will focus on the intersection of LLMs and KGs, covering areas of interest including, but not limited to:

- KG completion using LLMs
- Question answering with KGs and LLMs
- Explainability of LLMs with KG integration
- Reasoning with LLMs and KGs
- Enhanced prompt engineering using KGs

Contributions of the students:

Each student will be assigned one paper on the topic, which could be a research paper discussing a novel approach or a resource paper presenting datasets, tools, etc. The student will be responsible for the following tasks:

1. **Report Writing**: Read the assigned paper thoroughly and write a 15-page seminar report explaining the methods and findings in their own words.
2. **Presenting**: Prepare and deliver a seminar presentation to share insights from the paper with other seminar participants.
3. **Conducting Experiments**: If the authors provide code, re-implement it for small-scale experiments using Google Colab or make the implementation available via GitHub.

V **Seminar: From Physical Models to Digital Twins: A Data-Driven Simulation Workshop (Seminar/Master)** **Seminar (S) On-Site**
2512101, SS 2025, 2 SWS, Language: English, Open in study portal

Content
This seminar focuses on the data-driven discovery of simulation models in industrial settings, providing a hands-on approach to understanding and optimizing production processes.
Students will start by designing and constructing production lines using Lego Spike and similar modular systems. This activity will include developing comprehensive data-capturing pipelines to collect detailed event-logging raw data from their production lines.
Next, the seminar will explore advanced techniques for transforming this raw data into simulation models, e.g., Petri nets. Participants will learn and apply data-driven model extraction methods, such as process mining to extract workflow processes; statistical methods to fit probability distributions and analyze trends, and machine learning algorithms to model complex behaviors within the production process. Through these techniques, students will extract simulation models that reflect the real-world dynamics of their production lines. The seminar will then guide participants on how to validate the extracted simulation models to ensure their accuracy.
By the end of the seminar, students will be equipped with the skills to build model production lines, collect event logging data from them, transform event log data into actionable simulation models and use these models to drive efficiency and innovation in industrial production settings.

Grading Scheme:

Report - 50%

Presentations - 40%

Implementation - 10%

V **Seminar: Applications of Digital Twins (Master)** **Seminar (S) On-Site**
2513103, SS 2025, 2 SWS, Language: English, Open in study portal

Content

Seminar Name: Applications of Digital Twins

Size: 10 students (with 10 different topics)

Workload:

- 2 Lectures:
  - Introduction to Digital Twins and topic distribution
  - "How to Give Effective Presentations" lecture
- 10 student presentations (each 45 minutes in total)
- 10 student reports

Responsible Person: Hui Min Lee, Sanja Lazarova-Molnar

Deliverables for Grade:

- 1 Report per student and topic (8 pages, including references, IEEE Template, compulsory usage of Reference Manager – Zotero or EndNote)

- 25 mins presentation per student plus 20 min discussion (focus on the presentation topic + presentation skills) = 45 minutes for each student

Credits: 3 credits = 90 hours

Format/ Structure of the Seminar (Draft):

- 2 Lectures at the beginning of the semester

- Students have 1 week time to provide a priority list of 5 topics, distribution will be decided based on first come – first serve, ensuring that core topics are covered

- Q&As can be asked and answered over mails or ad-hoc appointments

- Students have time to work on the report and presentation during the semester

- Submission of all reports will be required 2 months after the intro lecture for ensuring fairness

- Presentations are done in blocks of 2 students per class, starting mid-June, presentations will be submitted at the day of the scheduled presentation

Approximate Time Consumption for Students (Draft):

- Lectures: 3 hours

- Student Presentations: 7.5 hours

- Topic Subscription: 1 hour

- Presentation Preparation: 15 hours

- Paper Writing and Literature Review: 63.5 hours

Description:

The seminar focuses on applications of Digital Twins and data-driven modeling, with an additional goal of improving scientific research and presentation skills for Master students. The seminar covers the diverse applications and use cases of Digital Twins in different domains such as manufacturing, energy systems, healthcare and many more, offering students an in-depth understanding of the role of Digital Twins in transforming the industries.

The seminar is structured as a literature review seminar. Each student can select a topic out of a predefined set, conduct further research and then write a comprehensive research paper. Students will also deliver presentations, synthesizing insights from both the provided starting reference literature and their own additional research.

By the end of the course, students will not only have a solid understanding of the current applications of Digital Twins and emerging trends but also be well-prepared to present their findings in an academic setting.

Topics:

1. **Digital Twins for Manufacturing Systems**

References:

- Zhang, Chenyuan, et al. "A reconfigurable modeling approach for digital twin-based manufacturing system." *Procedia Cirp* 83 (2019): 118-125. (96 citations)
- Kritzinger, Werner, et al. "Digital Twin in manufacturing: A categorical literature review and classification." *Ifac-PapersOnline* 51.11 (2018): 1016-1022. (1934 citations)
- Jaensch, Florian, et al. "Digital twins of manufacturing systems as a base for machine learning." *2018 25th International conference on mechatronics and machine vision in practice (M2VIP)*. IEEE, 2018. (73 citations)

2. Digital Twins for Energy Systems

References:

- Steindl, Gernot, et al. "Generic digital twin architecture for industrial energy systems." *Applied Sciences* 10.24 (2020): 8903. (78 citations)
- Granacher, Julia, et al. "Overcoming decision paralysis—A digital twin for decision making in energy system design." *Applied Energy* 306 (2022): 117954. (33 citations) -> focus on interactive digital twins
- Palensky, Peter, et al. "Digital twins and their use in future power systems." *Digital Twin* 1 (2022): 4. (37 citations)

3. Digital Twins in Healthcare

References:

- Alazab, Mamoun, et al. "Digital twins for healthcare 4.0-recent advances, architecture, and open challenges." *IEEE Consumer Electronics Magazine* (2022). (26 citations)
- Croatti, Angelo, et al. "On the integration of agents and digital twins in healthcare." *Journal of Medical Systems* 44 (2020): 1-8. (163 citations)
- Erol, Tolga, Arif Furkan Mendi, and Dilara Doğan. "The digital twin revolution in healthcare." *2020 4th international symposium on multidisciplinary studies and innovative technologies (ISMSIT)*. IEEE, 2020. (106 citations)

4. Digital Twins of City Infrastructures (in Smart Cities)

References:

- Deren, Li, Yu Wenbo, and Shao Zhenfeng. "Smart city based on digital twins." *Computational Urban Science* 1 (2021): 1-11. (110 citations)
- Deng, Tianhu, Keren Zhang, and Zuo-Jun Max Shen. "A systematic review of a digital twin city: A new pattern of urban governance toward smart cities." *Journal of Management Science and Engineering* 6.2 (2021): 125-134. (192 citations)
- Mylonas, Georgios, et al. "Digital twins from smart manufacturing to smart cities: A survey." *Ieee Access* 9 (2021): 143222-143249. (99 citations)

5. Digital Twins in Logistics

References:

- Moshood, Taofeeq D., et al. "Digital twins driven supply chain visibility within logistics: A new paradigm for future logistics." *Applied System Innovation* 4.2 (2021): 29. (71 citations)
- Agalianos, K., et al. "Discrete event simulation and digital twins: review and challenges for logistics." *Procedia Manufacturing* 51 (2020): 1636-1641. (74 citations)
- Korth, Benjamin, Christian Schwede, and Markus Zajac. "Simulation-ready digital twin for realtime management of logistics systems." *2018 IEEE international conference on big data (big data)*. IEEE, 2018. (64 citations)

6. Cognitive Digital Twins

References:

- Al Faruque, Mohammad Abdullah, et al. "Cognitive digital twin for manufacturing systems." *2021 Design, Automation & Test in Europe Conference & Exhibition (DATE)*. IEEE, 2021. (28 citations)
- Zhang, Nan, Rami Bahsoon, and Georgios Theodoropoulos. "Towards engineering cognitive digital twins with self-awareness." *2020 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*. IEEE, 2020. (22 citations)
- Zheng, Xiaochen, Jinzhi Lu, and Dimitris Kiritsis. "The emergence of cognitive digital twin: vision, challenges and opportunities." *International Journal of Production Research* 60.24 (2022): 7610-7632. (92 citations)

7. Fusing Data and Human Expert Knowledge in Digital Twins

References:

- Kulkarni, Vinay, Souvik Barat, and Tony Clark. "Towards adaptive enterprises using digital twins." *2019 winter simulation conference (WSC)*. IEEE, 2019. (22 citations)
- Vogel-Heuser, Birgit, et al. "Potential for combining semantics and data analysis in the context of digital twins." *Philosophical Transactions of the Royal Society A* 379.2207 (2021): 20200368. (16 citations)
- Todorovski, Ljupčo, and Sašo Džeroski. "Integrating knowledge-driven and data-driven approaches to modeling." *ecological modelling* 194.1-3 (2006): 3-13. (80 citations)

8. Digital Twins for Multi-agent / Complex Systems

References:

- Pretel, Elena, Alejandro Moya, Elena Navarro, Víctor López-Jaquero, and Pascual González. "Analysing the synergies between Multi-agent Systems and Digital Twins: A systematic literature review." *Information and Software Technology* (2024): 107503. (2 citations)
- Mariani, S., Picone, M., Ricci, A. (2022). About Digital Twins, Agents, and Multiagent Systems: A Cross-Fertilisation Journey. In: Melo, F.S., Fang, F. (eds) *Autonomous Agents and Multiagent Systems. Best and Visionary Papers. AAMAS 2022*. Lecture Notes in Computer Science, vol 13441. (11 citations)
- Marah H, Challenger M. Adaptive hybrid reasoning for agent-based digital twins of distributed multi-robot systems. *SIMULATION.* 2024;100(9):931-957. (0 citations – new articles)

9. Digital Twins for Energy Systems

References:

- Kabir, Md Rafiul, Dipal Halder, and Sandip Ray. "Digital Twins for IoT-driven Energy Systems: A Survey." *IEEE Access* (2024). (0 citations – new articles)
- Brosinsky, Christoph, Rainer Krebs, and Dirk Westermann. "Embedded Digital Twins in future energy management systems: paving the way for automated grid control." *at-Automatisierungstechnik* 68, no. 9 (2020): 750-764.(21 citations)
- Song, Zhao, Christoph M. Hackl, Abhinav Anand, Andre Thommessen, Jonas Petzschmann, Omar Kamel, Robert Braunbehrens, Anton Kaifel, Christian Roos, and Stefan Hauptmann. "Digital twins for the future power system: An overview and a future perspective." *Sustainability* 15, no. 6 (2023): 5259. .(32 citations)
- Mostafa, Omar & Lazarova-Molnar, Sanja. (2024). Enhancing Reliability of Energy Systems with Digital Twins: Challenges and Opportunities. (0 citations – new articles)

10. Digital Twins in Transportation and Automotive

References:

- Schwarz, Chris, and Ziran Wang. "The role of digital twins in connected and automated vehicles." *IEEE Intelligent Transportation Systems Magazine* 14, no. 6 (2022): 41-51. (91 citations)
- Bhatti, Ghanishtha, Harshit Mohan, and R. Raja Singh. "Towards the future of smart electric vehicles: Digital twin technology." *Renewable and Sustainable Energy Reviews* 141 (2021): 110801. (422 citations)
- Almeaibed, Sadeq, Saba Al-Rubaye, Antonios Tsourdos, and Nicolas P. Avdelidis. "Digital twin analysis to promote safety and security in autonomous vehicles." *IEEE Communications Standards Magazine* 5, no. 1 (2021): 40-46. (135 citations)

11. Digital Twins for Environment and Sustainability

References:

- Tzachor, Asaf, Soheil Sabri, Catherine E. Richards, Abbas Rajabifard, and Michele Acuto. "Potential and limitations of digital twins to achieve the sustainable development goals." *Nature Sustainability* 5, no. 10 (2022): 822-829. (110 citations)
- Corrado, Casey R., Suzanne M. DeLong, Emily G. Holt, Edward Y. Hua, and Andreas Tolk. "Combining green metrics and digital twins for sustainability planning and governance of smart buildings and cities." *Sustainability* 14, no. 20 (2022): 12988. (36 citations)
- Kim, Byungmo, Jaewon Oh, and Cheonhong Min. "Development of a simulation model for digital twin of an oscillating water column wave power generator structure with ocean environmental effect." *Sensors* 23, no. 23 (2023): 9472. (3 citations)

12. Digital Twins in Agriculture

References:

- Peladarinos, Nikolaos, Dimitrios Piromalis, Vasileios Cheimaras, Efthymios Tserepas, Radu Adrian Munteanu, and Panagiotis Papageorgas. "Enhancing smart agriculture by implementing digital twins: A comprehensive review." *Sensors* 23, no. 16 (2023): 7128. (60 citations)
- Escribà-Gelonch, Marc, Shu Liang, Pieter van Schalkwyk, Ian Fisk, Nguyen Van Duc Long, and Volker Hessel. "Digital Twins in Agriculture: Orchestration and Applications." *Journal of Agricultural and Food Chemistry* 72, no. 19 (2024): 10737-10752. (12 citations)
- Verdouw, Cor, Bedir Tekinerdogan, Adrie Beulens, and Sjaak Wolfert. "Digital twins in smart farming." *Agricultural Systems* 189 (2021): 103046. (494 citations)

V **Seminar: New Trends in Artificial Intelligence Techniques for Noise Prediction (Master)** **Seminar (S) On-Site**

2513108, SS 2025, 2 SWS, Language: English, Open in study portal

Content
Noise, especially in urban areas, is a major environmental issue that impacts quality of life and health, contributing to stress, sleep disturbances, and cardiovascular problems. Traffic noise, primarily from tire-road interactions, has become more prominent as electric vehicles reduce engine noise. Tackling this issue involves both passive methods, like noise barriers, and active solutions such as noise cancellation technologies.

In recent years, artificial intelligence (AI) has emerged as a powerful tool for managing noise. AI-based systems can classify noise sources, create noise maps, and develop control strategies. Advanced AI techniques, including Generative Adversarial Networks (GANs), AutoEncoders, Bi-Long Short-Term Memory (LSTM), and Bi-Gated Recurrent Units (GRUs), Graphical Convolutional Networks (GCN), Physics-informed neural networks, YOLO, Transformer, show great potential for reducing noise. Additionally, many computer vision techniques are used to improve noise conditions. This seminar will explore these AI methods and their role in enhancing conditions safety, minimizing environmental noise, and supporting intelligent transportation systems.

In this seminar, we try to understand Noise through data analysis and other techniques. We discuss current approaches to noise prediction and innovative AI approaches based on data science and machine learning.

Topics:

Introduction to Noise and Tire-Road Noise

Overview on Noise and Tire-Road Noise

Time Series Analysis and Image Analysis

Data Exploration and Visualization

Noise Feature Extraction and Analysis

Machine learning and Deep Learning Approach for Tire-Road Noise

Who are we looking for:

We are looking for students who want to expand their specialist knowledge and practical experience in artificial intelligence, signal processing, computer vision and road-tire noise. Participation provides the opportunity to actively participate in shaping the future of using artificial intelligence, computer vision and signal processing to reduce road-tire and traffic noise.

What we offer:

We provide you with tyre-road noise data. With this data, you can apply many signal processing, computer vision and artificial intelligence algorithms. This is where you can let your creativity run free and implement innovative solutions with our guidance.

Organizational:

- Kickoff meeting **on April 24, 2025**: Introduction to topics, information about data, clarification of organizational questions. In the Kickoff Meeting, Groups come together and each group has a theme.
- Interim presentation **29 May 2025**: Presentation of the current situation and information sharing.
- Final presentation on **July 17, 2025**: Presentation of results and submission of documents

Registration: Please briefly state your motivation for taking this course. Optionally you can attach your Transcript of Records and CV.

Deliverables (per team): 1 Report (min 10 pages, scientific paper format, including references) + Presentations (2) + Implementation Files(codes)

Grading relevant Parts: Written Report, Presentations and Implementation

V **Seminar Knowledge Discovery and Data Mining (Master)** **Seminar (S) On-Site**
2513309, SS 2025, 2 SWS, Language: English, Open in study portal

Content
In this seminar different machine learning and data mining methods are implemented.

The seminar includes different methods of machine learning and data mining. Participants of the seminar should have basic knowledge of machine learning and programming skills.

Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market
- Scientific Publications

Further Information: https://aifb.kit.edu/web/Lehre/Praktikum_Knowledge_Discovery_and_Data_Science

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/ .

Literature
Detaillierte Referenzen werden zusammen mit den jeweiligenThemen 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.

V Seminar Data Science & Real-time Big Data Analytics (Master)

Seminar (S)
On-Site

2513311, SS 2025, 2 SWS, Language: English, Open in study portal

Content
In this seminar, students will design applications in teams that use meaningful and creative Event Processing methods. Thereby, students have access to an existing record.

Event processing and real-time data are everywhere: financial market data, sensors, business intelligence, social media analytics, logistics. Many applications collect large volumes of data in real time and are increasingly faced with the challenge of being able to process them quickly and react promptly. The challenges of this real-time processing are currently also receiving a great deal of attention under the term "Big Data". The complex processing of real-time data requires both knowledge of methods for data analysis (data science) and their processing (real-time analytics). Seminar papers are offered on both of these areas as well as on interface topics, the input of own ideas is explicitly desired.

Further information to the practical seminar is given under the following Link:
http://seminar-cep.fzi.de

Questions are answered via the e-mail address sem-ep@fzi.de.

Organizational issues
Die Anmeldung erfolgt über das WiWi-Portal https://portal.wiwi.kit.edu/ .

V Cognitive Automobiles and Robots

Seminar (S)
On-Site

2513500, SS 2025, 2 SWS, Language: German/English, Open in study portal

Content
The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

V Seminar E-Voting (Master)

Seminar (S)
On-Site

2513553, SS 2025, 2 SWS, Language: German/English, Open in study portal

Content
What should a voting procedure fulfill? When is a voting procedure secure? Which components need to be examined? Which methods can be used to investigate this?

Cryptographic voting procedures and algorithmic voting (counting) procedures are examined from different perspectives (cryptographic methods, formal correctness, human factors).

This course can also be credited for the KASTEL certificate. Further information about obtaining the certificate can be found on the SECUSO website (https://secuso.aifb.kit.edu/Studium_und_Lehre.php).

Organizational issues
Die Anmeldung für das Seminar ist bis zum 20. April über https://portal.wiwi.kit.edu/ys/8668 möglich.

V

Large Language Model-Enhanced Representation Learning for Knowledge Graphs (Master)
2513607, SS 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Effective feature representation is critical for optimizing the performances of machine learning algorithms. Recently, Representation Learning (RL) has advanced significantly, focusing on embedding words and Knowledge Graphs (KGs) into low-dimensional vector spaces. Word embeddings encode words as vectors, capturing context, semantic similarity, and relationships. Similarly, KG representation learning (KGRL) algorithms (a.k.a. KG embedding (KGE) models) are used to represent entities and relations as vectors in a low-dimensional vector space, preserving structure and semantic connections.

KGE models can be unimodal, using a single source of information, or multimodal, integrating multiple sources such as relations between entities, text literals, numeric literals, images, etc. Capturing information from these sources ensures semantically rich representations. Multimodal KGE models either create separate representations for each source in non-unified spaces or a unified representation for KG elements. These embeddings are commonly used for KG completion tasks such as link prediction and entity classification.

Emerging methodologies for KGRL leverage LLMs such as LLaMA, GPT 3.5, and PaLM2. The integration of LLMs with KG KGRL signifies a pivotal advancement in the field of artificial intelligence, enhancing the ability to capture and utilize complex knowledge structures.

In this seminar, we aim to explore state-of-the-art approaches that utilize LLMs for Knowledge Graph representation learning.

Contributions of the students:

Each student will be assigned one paper on the topic, which could be a research paper discussing a novel approach or a resource paper presenting datasets, tools, etc. The student will be responsible for the following tasks:

1. **Report Writing**: Read the assigned paper thoroughly and write a 15-page seminar report explaining the methods and findings in their own words.
2. **Presenting**: Prepare and deliver a seminar presentation to share insights from the paper with other seminar participants.
3. **Conducting Experiments**: If the authors provide code, re-implement it for small-scale experiments using Google Colab or make the implementation available via GitHub.

T 3.507 Course: Seminar in Mathematics (Bachelor) [T-MATH-102265]

Responsible: Prof. Dr. Günter Last
Dr. Franz Nestmann
PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: M-WIWI-104905 - Mathematics

Type	Credits	Grading	Version
Examination of another type	3 CP	graded	1

T 3.508 Course: Seminar in Operations Research (Bachelor) [T-WIWI-103488]

Responsible: Prof. Dr. Stefan Nickel
Prof. Dr. Steffen Rebennack
Prof. Dr. Oliver Stein

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	2550131	Seminar on Methodical Foundations of Operations Research (B)	2 SWS	Seminar / 🗣	Stein, Beck, Schwarze
WT 24/25	2550461	Seminar on Trending Topics in Optimization and Machine Learning (Bachelor)	2 SWS	Seminar / 🧩	Rebennack, Warwicker, Kandora
WT 24/25	2550472	Seminar on Energy and Power Systems Optimization (Bachelor)	2 SWS	Seminar / 🧩	Rebennack, Warwicker, Kandora
WT 24/25	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar / 🧩	Nickel, Mitarbeiter
ST 2025	2500028	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar / 🧩	Nickel, Mitarbeiter, Pomes
ST 2025	2550131	Seminar on Methodical Foundations of Operations Research (BA)	2 SWS	Seminar / 🗣	Stein, Beck, Schwarze, Neussel
ST 2025	2550132	Seminar on Mathematical Optimization (MA)	2 SWS	Seminar / 🗣	Stein, Beck, Schwarze, Neussel
ST 2025	2550461	Seminar: Trending Topics in Machine Learning and Optimization (Bachelor)	2 SWS	Seminar / 💻	Rebennack, Warwicker, Kandora
ST 2025	2550472	Seminar: Energy and Power Systems Optimization (Bachelor)	2 SWS	Seminar / 🧩	Rebennack, Warwicker, Kandora
Exams					
WT 24/25	7900011_WS2425	Seminar in Operations Research B (Bachelor)			Stein
WT 24/25	7900012_WS2425	Seminar in Operations Research A (Master)			Stein
WT 24/25	7900113	Seminar Trending Topics in Optimization and Machine Learning (Bachelor)			Rebennack
WT 24/25	7900313	Seminar on Power Systems Optimization (Bachelor)			Rebennack
WT 24/25	7900342	Seminar Modern OR and Innovative Logistics			Nickel
ST 2025	7900026	Seminar Modern OR and Innovative Logistics			Nickel
ST 2025	7900200_SS2025	Seminar in Operations Research A (Master)			Stein
ST 2025	7900201_SS2025	Seminar in Operations Research (Bachelor)			Stein
ST 2025	7900347	Seminar on Power Systems Optimization (Bachelor)			Rebennack
ST 2025	7900359	Digitalization in the Steel Industry			Nickel

Legend: 💻 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Seminar on Methodical Foundations of Operations Research (B)** **Seminar (S) On-Site**
2550131, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor studenst are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

Remarks:

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

Assessment:

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation.The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

Workload:

The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Die Literaur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a prepatory meeting.

V **Seminar: Modern OR and Innovative Logistics** **Seminar (S) Blended (On-Site/Online)**
2550491, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

Organizational issues
Anmeldezeitraum: 11.09.24 bis 30.09.24 im Wiwi Portal

Literature
Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

V Seminar: Modern OR and Innovative Logistics

2500028, SS 2025, 2 SWS, Language: German, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

Organizational issues
Anmeldung erfolgt über das Wiwi-Portal. Nähere Informationen hierzu finden Sie hier zu einem späteren Zeitpunkt.

Literature
Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

V Seminar on Methodical Foundations of Operations Research (BA)

2550131, SS 2025, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content
The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor studenst are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

Remarks:

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

Assessment:

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation.The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

Workload:

The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Die Literaur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a prepatory meeting.

T 3.509 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-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	2550131	Seminar on Methodical Foundations of Operations Research (B)	2 SWS	Seminar / 🗣	Stein, Beck, Schwarze
WT 24/25	2550132	Seminar zur Mathematischen Optimierung (MA)	2 SWS	Seminar / 🗣	Stein, Beck, Schwarze
WT 24/25	2550462	Seminar on Trending Topics in Optimization and Machine Learning (Master)	2 SWS	Seminar / 🧩	Rebennack, Warwicker, Kandora
WT 24/25	2550473	Seminar on Energy and Power Systems Optimization (Master)	2 SWS	Seminar / 🧩	Rebennack, Warwicker, Kandora
WT 24/25	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar / 🧩	Nickel, Mitarbeiter
ST 2025	2500028	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar / 🧩	Nickel, Mitarbeiter, Pomes
ST 2025	2550131	Seminar on Methodical Foundations of Operations Research (BA)	2 SWS	Seminar / 🗣	Stein, Beck, Schwarze, Neussel
ST 2025	2550132	Seminar on Mathematical Optimization (MA)	2 SWS	Seminar / 🗣	Stein, Beck, Schwarze, Neussel
ST 2025	2550462	Seminar: Trending Topics in Machine Learning and Optimization (Master)	2 SWS	Seminar / 🧩	Rebennack, Warwicker, Kandora
ST 2025	2550473	Seminar: Energy and Power Systems Optimization (Master)	2 SWS	Seminar / 🧩	Rebennack, Warwicker, Kandora

Exams			
WT 24/25	7900011_WS2425	Seminar in Operations Research B (Bachelor)	Stein
WT 24/25	7900012_WS2425	Seminar in Operations Research A (Master)	Stein
WT 24/25	7900169	Seminar Trending Topics in Optimization and Machine Learning (Master)	Rebennack
WT 24/25	7900314	Seminar on Power Systems Optimization (Master)	Rebennack
WT 24/25	7900342	Seminar Modern OR and Innovative Logistics	Nickel
ST 2025	7900026	Seminar Modern OR and Innovative Logistics	Nickel
ST 2025	7900200_SS2025	Seminar in Operations Research A (Master)	Stein
ST 2025	7900201_SS2025	Seminar in Operations Research (Bachelor)	Stein
ST 2025	7900295	Seminar Trending Topics in Machine Learning and Opt. - Operations Research A (Master)	Rebennack
ST 2025	7900349	Seminar on Power Systems Optimization (Master)	Rebennack
ST 2025	7900359	Digitalization in the Steel Industry	Nickel

Legend: 📱 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Seminar on Methodical Foundations of Operations Research (B)** **Seminar (S) On-Site**
2550131, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor studenst are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

Remarks:

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

Assessment:

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation.The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

Workload:

The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Die Literaur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a prepatory meeting.

V **Seminar: Modern OR and Innovative Logistics** **Seminar (S) Blended (On-Site/Online)**
2550491, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

Organizational issues
Anmeldezeitraum: 11.09.24 bis 30.09.24 im Wiwi Portal

Literature
Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

V Seminar: Modern OR and Innovative Logistics

Seminar (S)
Blended (On-Site/Online)

2500028, SS 2025, 2 SWS, Language: German, Open in study portal

Content
The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

Organizational issues
Anmeldung erfolgt über das Wiwi-Portal. Nähere Informationen hierzu finden Sie hier zu einem späteren Zeitpunkt.

Literature
Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

V Seminar on Methodical Foundations of Operations Research (BA)

Seminar (S)
On-Site

2550131, SS 2025, 2 SWS, Language: German, Open in study portal

Content
The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor studenst are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

Remarks:

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

Assessment:

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation.The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

Workload:

The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Die Literaur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a prepatory meeting.

T 3.510 Course: Seminar in Operations Research B (Master) [T-WIWI-103482]

Responsible: Prof. Dr. Stefan Nickel
Prof. Dr. Steffen Rebennack
Prof. Dr. Oliver Stein

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	2550131	Seminar on Methodical Foundations of Operations Research (B)	2 SWS	Seminar / 🗣	Stein, Beck, Schwarze
WT 24/25	2550132	Seminar zur Mathematischen Optimierung (MA)	2 SWS	Seminar / 🗣	Stein, Beck, Schwarze
WT 24/25	2550462	Seminar on Trending Topics in Optimization and Machine Learning (Master)	2 SWS	Seminar / 🧩	Rebennack, Warwicker, Kandora
WT 24/25	2550473	Seminar on Energy and Power Systems Optimization (Master)	2 SWS	Seminar / 🧩	Rebennack, Warwicker, Kandora
WT 24/25	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar / 🧩	Nickel, Mitarbeiter
ST 2025	2500028	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar / 🧩	Nickel, Mitarbeiter, Pomes
ST 2025	2550131	Seminar on Methodical Foundations of Operations Research (BA)	2 SWS	Seminar / 🗣	Stein, Beck, Schwarze, Neussel
ST 2025	2550132	Seminar on Mathematical Optimization (MA)	2 SWS	Seminar / 🗣	Stein, Beck, Schwarze, Neussel
ST 2025	2550462	Seminar: Trending Topics in Machine Learning and Optimization (Master)	2 SWS	Seminar / 🧩	Rebennack, Warwicker, Kandora
ST 2025	2550473	Seminar: Energy and Power Systems Optimization (Master)	2 SWS	Seminar / 🧩	Rebennack, Warwicker, Kandora

Exams			
WT 24/25	7900011_WS2425	Seminar in Operations Research B (Bachelor)	Stein
WT 24/25	7900012_WS2425	Seminar in Operations Research A (Master)	Stein
WT 24/25	7900314	Seminar on Power Systems Optimization (Master)	Rebennack
WT 24/25	7900342	Seminar Modern OR and Innovative Logistics	Nickel
ST 2025	7900026	Seminar Modern OR and Innovative Logistics	Nickel
ST 2025	7900200_SS2025	Seminar in Operations Research A (Master)	Stein
ST 2025	7900201_SS2025	Seminar in Operations Research (Bachelor)	Stein
ST 2025	7900296	Seminar in Operations Research B (Master)	Rebennack
ST 2025	7900359	Digitalization in the Steel Industry	Nickel

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Seminar on Methodical Foundations of Operations Research (B)** **Seminar (S) On-Site**
2550131, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor studenst are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

Remarks:

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

Assessment:

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation.The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

Workload:

The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Die Literaur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a prepatory meeting.

V **Seminar: Modern OR and Innovative Logistics** **Seminar (S) Blended (On-Site/Online)**
2550491, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

Organizational issues
Anmeldezeitraum: 11.09.24 bis 30.09.24 im Wiwi Portal

Literature
Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

V Seminar: Modern OR and Innovative Logistics

2500028, SS 2025, 2 SWS, Language: German, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

Organizational issues
Anmeldung erfolgt über das Wiwi-Portal. Nähere Informationen hierzu finden Sie hier zu einem späteren Zeitpunkt.

Literature
Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

V Seminar on Methodical Foundations of Operations Research (BA)

2550131, SS 2025, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content
The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor studenst are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

Remarks:

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

Assessment:

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation.The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

Workload:

The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Die Literaur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a prepatory meeting.

T 3.511 Course: Seminar in Statistics (Bachelor) [T-WIWI-103489]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	25000111	Statistics and Epidemics		Seminar / 🗣	Bracher
WT 24/25	2500018		2 SWS	Seminar / 🗣	Grothe, Kaplan, Liu
WT 24/25	2500047	Advanced Topics in Econometrics, Statistics and Data Science	2 SWS	Seminar	Schienle, Krüger, Buse, Rüter, Bracher, Nemcova
WT 24/25	2521310	Topics in Econometrics	2 SWS	Seminar	Schienle, Krüger, Rüter
ST 2025	2500208	Statistics and Large Language Models	2 SWS	Seminar	Krüger, Eberl
ST 2025	2521310	Advanced Topics in Econometrics	2 SWS	Seminar	Schienle, Buse, Rüter, Bracher, Eberl
ST 2025	2550560	Spezielle Themen zu Statistik, Datenanalyse und maschinellem Lernen	2 SWS	Seminar / 🗣	Grothe, Liu
Exams					
WT 24/25	79000111	Statistics and Epidemics			Bracher
WT 24/25	7900144	Topics in Econometrics			Schienle
WT 24/25	7900299	Seminar in Statistics (Bachelor)			Grothe
ST 2025	7900355	Seminar in Statistics (Bachelor)			Grothe

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Statistics and Epidemics** **Seminar (S) On-Site**
25000111, WS 24/25, SWS, Language: English, Open in study portal

Content

Motivation

Infectious disease epidemiology gives rise to a large variety of real-time data streams. During the COVID-19 pandemic, the interpretation and statistical analysis of these data has proven crucial, but also highly challenging. In this seminar, students will get to know central concepts of infectious disease surveillance and modelling from a statistical perspective. Following an overview of various aspects in the form of blocked lectures, students will choose a more specific topic for their seminar thesis.

Learning Goals

Students develop an understanding of central modeling tasks and methods, including

- estimation of reproductive numbers
- compartment models of disease spread
- nowcasting and short-term forecasting of disease spread
- detection of outbreaks
- diagnostic testing

Moreover, they get to know various data types commonly used in the analysis of disease spread.

Logistics

The project seminar is worth 4.5 credit points (Leistungspunkte). There will be three blocked lectures (approx. 135 minutes each) in the beginning of the lecture period. For the various topics covered, subjects for seminar theses will be proposed (and students are allowed to propose their own topics). Towards the end of the semester, students present their progress on the chosen topics to the group. Grades will be based on this presentation (25%) and the final report (75%).

Organizational issues

Prerequisites

Students should have a very good working knowledge of statistics, including proficiency in a programming language for applied data analysis. The lecture VWL3 Introduction to Econometrics is a prerequisite for the project seminar. Most available software in the field is in R, but in principle Python can be used as well. Advanced knowledge of biology, medicine or epidemiology is not required.

Application Procedure

Please submit a transcript of records as well as a short letter of motivation (roughly 200 words) via WIWI-Portal: https://portal.wiwi.kit.edu/ys/8223

Application time frame: July 20th, 2024 to September, 30th, 2024.

V **Advanced Topics in Econometrics, Statistics and Data Science** **Seminar (S)**
2500047, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

V **Topics in Econometrics** **Seminar (S)**
2521310, WS 24/25, 2 SWS, Language: German, Open in study portal

Organizational issues
Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

V

Advanced Topics in Econometrics

2521310, SS 2025, 2 SWS, Language: German/English, Open in study portal

Seminar (S)

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

T 3.512 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-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	25000111	Statistics and Epidemics		Seminar / 🗣	Bracher
WT 24/25	2500012		2 SWS	Seminar / 🗣	Grothe, Kaplan, Liu
WT 24/25	2500047	Advanced Topics in Econometrics, Statistics and Data Science	2 SWS	Seminar	Schienle, Krüger, Buse, Rüter, Bracher, Nemcova
WT 24/25	2521310	Topics in Econometrics	2 SWS	Seminar	Schienle, Krüger, Rüter
ST 2025	2500208	Statistics and Large Language Models	2 SWS	Seminar	Krüger, Eberl
ST 2025	2521310	Advanced Topics in Econometrics	2 SWS	Seminar	Schienle, Buse, Rüter, Bracher, Eberl
ST 2025	2550561	Fortgeschrittene Themen zu Statistik, Datenanalyse und maschinellem Lernen (Master)	2 SWS	Seminar / 🗣	Grothe, Liu
Exams					
WT 24/25	79000111	Statistics and Epidemics			Bracher
WT 24/25	7900090	Advanced Topics in Econometrics, Statistics and Data Science			Schienle
WT 24/25	7900144	Topics in Econometrics			Schienle
WT 24/25	7900216	Seminar in Statistics A (Master)			Grothe
ST 2025	7900343	Seminar in Statistics A (Master)			Grothe

Legend: 📱 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Statistics and Epidemics** **Seminar (S) On-Site**
25000111, WS 24/25, SWS, Language: English, Open in study portal

Content

Motivation

Infectious disease epidemiology gives rise to a large variety of real-time data streams. During the COVID-19 pandemic, the interpretation and statistical analysis of these data has proven crucial, but also highly challenging. In this seminar, students will get to know central concepts of infectious disease surveillance and modelling from a statistical perspective. Following an overview of various aspects in the form of blocked lectures, students will choose a more specific topic for their seminar thesis.

Learning Goals

Students develop an understanding of central modeling tasks and methods, including

- estimation of reproductive numbers
- compartment models of disease spread
- nowcasting and short-term forecasting of disease spread
- detection of outbreaks
- diagnostic testing

Moreover, they get to know various data types commonly used in the analysis of disease spread.

Logistics

The project seminar is worth 4.5 credit points (Leistungspunkte). There will be three blocked lectures (approx. 135 minutes each) in the beginning of the lecture period. For the various topics covered, subjects for seminar theses will be proposed (and students are allowed to propose their own topics). Towards the end of the semester, students present their progress on the chosen topics to the group. Grades will be based on this presentation (25%) and the final report (75%).

Organizational issues

Prerequisites

Students should have a very good working knowledge of statistics, including proficiency in a programming language for applied data analysis. The lecture VWL3 Introduction to Econometrics is a prerequisite for the project seminar. Most available software in the field is in R, but in principle Python can be used as well. Advanced knowledge of biology, medicine or epidemiology is not required.

Application Procedure

Please submit a transcript of records as well as a short letter of motivation (roughly 200 words) via WIWI-Portal: https://portal.wiwi.kit.edu/ys/8223

Application time frame: July 20th, 2024 to September, 30th, 2024.

V **Advanced Topics in Econometrics, Statistics and Data Science** **Seminar (S)**
2500047, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

V **Topics in Econometrics** **Seminar (S)**
2521310, WS 24/25, 2 SWS, Language: German, Open in study portal

Organizational issues
Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

V

Advanced Topics in Econometrics

2521310, SS 2025, 2 SWS, Language: German/English, Open in study portal

Seminar (S)

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

T 3.513 Course: Seminar in Statistics B (Master) [T-WIWI-103484]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	25000111	Statistics and Epidemics		Seminar / 🗣	Bracher
WT 24/25	2500012		2 SWS	Seminar / 🗣	Grothe, Kaplan, Liu
WT 24/25	2500047	Advanced Topics in Econometrics, Statistics and Data Science	2 SWS	Seminar	Schienle, Krüger, Buse, Rüter, Bracher, Nemcova
WT 24/25	2521310	Topics in Econometrics	2 SWS	Seminar	Schienle, Krüger, Rüter
ST 2025	2500208	Statistics and Large Language Models	2 SWS	Seminar	Krüger, Eberl
ST 2025	2521310	Advanced Topics in Econometrics	2 SWS	Seminar	Schienle, Buse, Rüter, Bracher, Eberl
ST 2025	2550561	Fortgeschrittene Themen zu Statistik, Datenanalyse und maschinellem Lernen (Master)	2 SWS	Seminar / 🗣	Grothe, Liu
Exams					
WT 24/25	79000111	Statistics and Epidemics			Bracher
WT 24/25	7900089	Seminar in Statistics B (Master)			Schienle
WT 24/25	7900090	Advanced Topics in Econometrics, Statistics and Data Science			Schienle
WT 24/25	7900241	Seminar in Statistics B (Master)			Grothe
ST 2025	7900341	Seminar in Statistics B (Master)			Grothe

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V **Statistics and Epidemics** **Seminar (S) On-Site**
25000111, WS 24/25, SWS, Language: English, Open in study portal

Content

Motivation

Infectious disease epidemiology gives rise to a large variety of real-time data streams. During the COVID-19 pandemic, the interpretation and statistical analysis of these data has proven crucial, but also highly challenging. In this seminar, students will get to know central concepts of infectious disease surveillance and modelling from a statistical perspective. Following an overview of various aspects in the form of blocked lectures, students will choose a more specific topic for their seminar thesis.

Learning Goals

Students develop an understanding of central modeling tasks and methods, including

- estimation of reproductive numbers
- compartment models of disease spread
- nowcasting and short-term forecasting of disease spread
- detection of outbreaks
- diagnostic testing

Moreover, they get to know various data types commonly used in the analysis of disease spread.

Logistics

The project seminar is worth 4.5 credit points (Leistungspunkte). There will be three blocked lectures (approx. 135 minutes each) in the beginning of the lecture period. For the various topics covered, subjects for seminar theses will be proposed (and students are allowed to propose their own topics). Towards the end of the semester, students present their progress on the chosen topics to the group. Grades will be based on this presentation (25%) and the final report (75%).

Organizational issues

Prerequisites

Students should have a very good working knowledge of statistics, including proficiency in a programming language for applied data analysis. The lecture VWL3 Introduction to Econometrics is a prerequisite for the project seminar. Most available software in the field is in R, but in principle Python can be used as well. Advanced knowledge of biology, medicine or epidemiology is not required.

Application Procedure

Please submit a transcript of records as well as a short letter of motivation (roughly 200 words) via WIWI-Portal: https://portal.wiwi.kit.edu/ys/8223

Application time frame: July 20th, 2024 to September, 30th, 2024.

V **Advanced Topics in Econometrics, Statistics and Data Science** **Seminar (S)**
2500047, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

V **Topics in Econometrics** **Seminar (S)**
2521310, WS 24/25, 2 SWS, Language: German, Open in study portal

Organizational issues
Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

V

Advanced Topics in Econometrics

2521310, SS 2025, 2 SWS, Language: German/English, Open in study portal

Seminar (S)

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

T 3.514 Course: Seminar in Transportation [T-BGU-100014]

Responsible: PD Dr.-Ing. Martin Kagerbauer
Prof. Dr.-Ing. Peter Vortisch
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	3 CP	graded	Each term	1 terms	1

Events					
WT 24/25	6232903	Seminar Transport Studies	2 SWS	Seminar / 🗣	Vortisch, Kagerbauer
ST 2025	6232903	Seminar Verkehrswesen	2 SWS	Seminar / 🏘	Vortisch, Kagerbauer
Exams					
WT 24/25	8245100014	Seminar in Transportation			Vortisch, Chlond

Legend: 💻 Online, 🏘 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
seminar paper, appr. 10 pages, and presentation, appr. 10 min.

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
90 hours

T 3.515 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	see Annotations	1

Assessment
Alternative exam assessment.

Recommendations
Prior attendance of the course Innovation Management [2545015] is recommended.

Additional Information
The course is no longer offered.

Workload
90 hours

T 3.516 Course: Seminar Production Technology [T-MACH-109062]

Responsible: Prof. Dr.-Ing. Jürgen Fleischer
Prof. Dr.-Ing. Gisela Lanza
Prof. Dr.-Ing. Volker Schulze

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
ST 2025	2149665	Seminar Production Technology	1 SWS	Seminar /	Fleischer, Lanza, Schulze, Zanger
Exams					
WT 24/25	76-T-MACH-109062	Seminar Production Technology			Fleischer, Lanza, Schulze, Zanger
ST 2025	76-T-MACH-109062	Seminar Production Technology			Fleischer, Lanza, Schulze, Zanger

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Assessment
Alternative test achievement (graded):

- written elaboration (workload of at least 80 h)
- oral presentation (approx. 30 min)

Prerequisites
none

Additional Information
The course is offered in German.

The specific topics are published on the homepage of the wbk Institute of Production Science.

Workload
90 hours

Below you will find excerpts from events related to this course:

V Seminar Production Technology

2149665, SS 2025, 1 SWS, Language: German, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
In course of the seminar Production Technology current issues of the wbk main fields of research "Manufacturing and Materials Technology", "Machines, Equipment and Process Automation" as well as "Production Systems" are discussed.

The specific topics are published on the homepage of the wbk Institute of Production Science.

Learning Outcomes:

The students …

- are in a position to independently handle current, research-based tasks according to scientific criteria.
- are able to research, analyze, abstract and critically review the information.
- can draw own conclusions using their interdisciplinary knowledge from the less structured information and selectively develop current research results.
- can logically and systematically present the obtained results both orally and in written form in accordance with scientific guidelines (structuring, technical terminology, referencing). They can argue and defend the results professionally in the discussion.

Workload:

regular attendance: 10 hours
self-study: 80 hours

Organizational issues
siehe http://www.wbk.kit.edu/seminare.php

T 3.517 Course: Seminar Sensors [T-ETIT-100707]

Responsible: Dr. Wolfgang Menesklou
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	2304233	Seminar Sensor Technology	2 SWS	Seminar / 🗣	Menesklou
ST 2025	2304233	Seminar Sensorik	2 SWS	Seminar / 🗣	Menesklou
Exams					
WT 24/25	7304233	Seminar Sensors			Menesklou
ST 2025	7304233	Seminar Sensors			Menesklou

Legend: 🖥 Online, 🌸 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
none

T 3.518 Course: Seminar: Governance, Risk & Compliance [T-INFO-102047]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law
M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Version
Examination of another type	3 CP	graded	1

Events					
ST 2025	2400005	Governance, Risk & Compliance	2 SWS	Seminar / 🗣	Herzig, Siddiq
Exams					
ST 2025	7500140	Seminar: Legal Studies I			Raabe, Melullis, Boehm, Sattler

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

T 3.519 Course: Seminar: Legal Studies I [T-INFO-101997]

Responsible: N.N.
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each term	1

Events					
WT 24/25	2400060	Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection	2 SWS	Seminar / 🗣	Reussner, Raabe, Werner, Müller-Quade
WT 24/25	2400184	EU Digital Regulatory Framework	2 SWS	Seminar / 🗣	Zufall
WT 24/25	2400203	(Smart) City in and as a Network	2 SWS	Seminar / 🗣	Kasper
WT 24/25	2400209	Rechtliche Herausforderungen für die Europäische Datenökonomie	2 SWS	Seminar / 🗣	Sattler
WT 24/25	2400216	(Generative) KI und Recht	2 SWS	Seminar / 🧩	Boehm, Vettermann
WT 24/25	2513214	Seminar Information security and Data protection (Bachelor)	2 SWS	Seminar / 🗣	Volkamer, Raabe, Schiefer, Hennig, Werner, Ullrich
ST 2025	2400005	Governance, Risk & Compliance	2 SWS	Seminar / 🗣	Herzig, Siddiq
ST 2025	2400078	Intelligente Chatbots und Recht	2 SWS	Seminar / 🗣	Raabe
ST 2025	2400171	Regulating AI: from ethics to law	2 SWS	Seminar / 🗣	Gil Gasiola
ST 2025	2400177	Designing Data Governance of Digital Systems	2 SWS	Seminar / 🗣	Pathak
ST 2025	2400190	EU Digital Regulatory Framework	2 SWS	Seminar / 🗣	Zufall
ST 2025	2400204	(Generative) KI und Recht	2 SWS	Seminar / 🧩	Boehm
ST 2025	2400207	Rechtlicher Rahmen für die Europäische Datenökonomie	2 SWS	Seminar / 🗣	Sattler
ST 2025	2400208	Rechtlicher Rahmen für Künstliche Intelligenz	2 SWS	Seminar / 🗣	Sattler
ST 2025	24820	Current Issues in Patent Law	2 SWS	Seminar / 🗣	Melullis
Exams					
WT 24/25	7500035	Seminar: Legal Studies II			Zufall
WT 24/25	7500182	Seminar: Legal Studies II			Boehm, Raabe, Sattler
WT 24/25	7500232	Seminar Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection			Reussner
WT 24/25	7500249	Seminar: IT- Security Law			Zufall
ST 2025	7500140	Seminar: Legal Studies I			Raabe, Melullis, Boehm, Sattler
ST 2025	7500159	Seminar: Legal Studies I			Zufall
ST 2025	7500237	Seminar: Law and Legal Studies			Zufall

Legend: 💻 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Below you will find excerpts from events related to this course:

V EU Digital Regulatory Framework

2400184, WS 24/25, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
This class aims to provide an overview on the legal instruments forming the EU digital regulatory framework. Following its Digital Single Market Strategy, the EU has set up a new strategic programme for a "Digital Decade". Existing regulations like the General Data Protection Regulation (GDPR), or the E-Commerce Directive, are being complemented by a variety of new instruments that aim to set binding rules on online markets, to regulate data flows in various ways, but also to pioneer a legal framework on AI. Prominent instruments include the new AI Act, the Digital Services Act (DSA) and Digital Markets Act (DMA), the Data Act, Data Governance Act, or Open Data Directive.

The class will provide an overview on the existing framework: Which regulations and directives are relevant? How do they apply and interact which each other in a broader context?

Another objective is to provide students with the ability to read these legal instruments: How to access regulatory instruments that often have more than 100 pages (without having to read every single sentence)? How to gain a comprehensive, high-level understanding of the instrument? How to identify parts relevant to a particular legal problem?

The class will start with an introduction into EU law and regulatory instruments in general. Concrete guidance on reading, analysing and working with legal instruments in English will be given. Based on these instructions, students will be assigned legal instruments to present in the final unit along with a two-pages report.

Grades will be assigned based on the quality of these presentations and the report, as well as participation in the discussion (presentation: 40 %, two-pages report: 40 %, discussion: 20 %).

Organizational issues
WS 2024/25

Hierbei handelt es sich NICHT um eine Pro-Seminar, sondern um ein Seminar (aus Rechtswissenschaften).

Anmeldungen für das Seminar bitte NUR! über das WiWi-Portal!

***Für die Prüfung bitte NUR über CAS (Campus-Portal) anmelden!**

*Erläuterung: nach der für die Teilnahme am Seminar verbindlichen Teilnahme an der Einführungsveranstaltung bitte Anmeldung über das Campus-System (notwendig für die Erfassung der Note der Seminararbeit).

V

Regulating AI: from ethics to law

2400171, SS 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
Credit points = ECTS

3 ECTS
Language:

English

Competency Goals:
Students comprehend the role of technology regulation.

They are able to identify different types of regulation and their impact on different stakeholders.

They know the main aspects of the regulation of AI systems.

They understand the foundations of the AI Act of the EU.

They know the content of AI principles and are able to assess their implementation in specific projects.

Content:
This seminar will provide an overview of the regulation of technologies and in particular the regulation of AI systems. After an introduction to forms of regulation, students will explore the different regulatory instruments from the perspective of the consolidated principles of AI: fairness, transparency, privacy, security and accountability. This will allow students to discuss how the principles and rules governing AI can be implemented in concrete cases. The seminar will cover the following topics:

- Introduction to technology regulation
- Objectives of regulation
- Types of regulation
- Challenges in regulating new / disruptive technologies
- Specific challenges in regulating AI
- Fragmented/vertical regulation of AI
- AI Act
- AI principles: fairness, transparency, privacy, security, and accountability
- The role of principles in regulating AI
    - Dealing with principles when developing and implementing AI systems

Competency certificate:
The assessment of this course is carried out by the following aspects, which will be considered in the grading (§ 4 Abs. 2 Nr. 3 SPO): term paper (approx. 5 pages), presentation (approx. 20 min.) and discussion.

The grading scale will be announced in the course. Students may redraw from the examination during the first two weeks after the topic has been communicated.

Organizational issues
Anmeldungen für das Seminar bitte NUR! über das WiWi-Portal!
***Für die Prüfung bitte NUR über CAS (Campus-Portal) anmelden!**

*ErläuterungNach der für die Teilnahme am Seminar verbindlichen Teilnahme an der Einführungsveranstaltung bitte Anmeldung über das Campus-System (notwendig für die Erfassung der Note der Seminararbeit).

Blockseminar im SoSe 2025 (2 Termine): Termine und Uhrzeit:

Donnerstag, 24.04.2025, 13:30 - 17:30 Uhr

Donnerstag, 10.07.2025, 13:30 - 17:30 Uhr.

Raum: jeweils im Seminarraum Nr. 313 (Geb. 07.08)**English:**Please register for the seminar ONLY via the WiWi-Portal!
*Please register for the exam ONLY via CAS (Campus-Portal)!

*ExplanationAfter attending the introductory event, which is mandatory for participation in the seminar, please register via the campus system (necessary for recording the grade of the seminar paper).

Block seminar in summer term 2024 (2 dates):

Dates and time:

Thursday, 24th April 2025, 13:30 - 17:30 h

Thursday, 10th July 2025, 13:30 - 17:30 h.

Room:each time in seminar room no. 313 (building 07.08)

V Designing Data Governance of Digital Systems

2400177, SS 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
The latest regulations in the digital sector at EU level represent a highly topical and important regulatory instrument with enormous practical relevance for students of computer science and business informatics. The seminar not only enables students to acquire important knowledge in this area, but also to apply it specifically to the governance of digital systems and to learn the practical design of digital systems against the background of legal framework conditions.

Organizational issues
***Please register for the exam ONLY via CAS (Campus-Portal)!**

***Explanation:after attending the introductory event,** which is mandatory for participation in the seminar**, please register via the campus system** (necessary for recording the grade of the seminar paper).

Due to the minimum number of text characters that can be used, please check ILIAS and the WiWi portal for details such as dates and location. Thank you.

V EU Digital Regulatory Framework

2400190, SS 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
Note:
This class is mainly intended for Bachelor and Master students in Business Informatics and those wth Law as a minor subject, but also open interested students from other disciplines.

This class aims to provide an overview on the legal instruments forming the EU digital regulatory framework. Following its Digital Single Market Strategy, the EU has set up a new strategic programme for a "Digital Decade". Existing regulations like the General Data Protection Regulation (GDPR), or the E-Commerce Directive, are being complemented by a variety of new instruments that aim to set binding rules on online markets, to regulate data flows in various ways, but also to pioneer a legal framework on AI. Prominent instruments include the new AI Act (proposal), the Digital Services Act (DSA) and Digital Markets Act (DMA), the Data Act, Data Governance Act, or Open Data Directive.

The class will provide an overview on the existing framework: Which regulations and directives are relevant? How do they apply and interact which each other in a broader context?

Another objective is to provide students with the ability to read these legal instruments: How to access regulatory instruments that often have more than 100 pages (without having to read every single sentence)? How to gain a comprehensive, high-level understanding of the instrument? How to identify parts relevant to a particular legal problem?

The class will start with an introduction into EU law and regulatory instruments in general. Concrete guidance on reading, analysing and working with legal instruments in English will be given. Based on these instructions, students will be assigned legal instruments to present in the final unit along with a two-pages report.

Grades will be assigned based on the quality of these presentations and the report, as well as participation in the discussion (presentation: 40 %, two-pages report: 40 %, discussion: 20 %).

Organizational issues
Anmeldungen für das Seminar bitte NUR! über das WiWi-Portal!

***Für die Prüfung bitte NUR über CAS (Campus-Portal) anmelden!**

*Erläuterung: nach der für die Teilnahme am Seminar verbindlichen Teilnahme an der Einführungsveranstaltung bitte Anmeldung über das Campus-System (notwendig für die Erfassung der Note der Seminararbeit).

***Termine im SoSe* 2025:**

Mittwoch, den 7. Mai 2025, 16-19 Uhr (Kick-off)

Donnerstag, den 17. Juli 2025, 14:00 - 18:00 Uhr (Präsentationen).

Raum:

jeweils im Seminarraum Nr. 313, Geb. 07.08.

English:

Please register for the seminar ONLY via the WiWi-Portal!

**Please register for the exam ONLY via CAS (Campus-Portal)!*

**Explanation: after attending the introductory event, which is mandatory for participation in the seminar, please register via Campus System (necessary for recording the grade of the seminar papers).*

Dates in summer term 2025:

Wednesday, 7 May 2025, 16-19h (kick-off)

Thursday, 17th July 2025, 14:00 - 18:00 h (presentations).

Room:

In seminar room no. 313, building 07.08.

T 3.520 Course: Seminar: Legal Studies II [T-INFO-105945]

Responsible: N.N.
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Version
Examination of another type	3 CP	graded	1

Events					
WT 24/25	2400014	Current Issues in Patent Law	2 SWS	Seminar / 🗣	Melullis
WT 24/25	2400060	Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection	2 SWS	Seminar / 🗣	Reussner, Raabe, Werner, Müller-Quade
WT 24/25	2400125	Security and Privacy Awareness	2 SWS	Seminar / 🧩	Seidel-Saul, Volkamer, Boehm, Aldag, Veit
WT 24/25	2400184	EU Digital Regulatory Framework	2 SWS	Seminar / 🗣	Zufall
WT 24/25	2400203	(Smart) City in and as a Network	2 SWS	Seminar / 🗣	Kasper
WT 24/25	2400209	Rechtliche Herausforderungen für die Europäische Datenökonomie	2 SWS	Seminar / 🗣	Sattler
WT 24/25	2400216	(Generative) KI und Recht	2 SWS	Seminar / 🧩	Boehm, Vettermann
WT 24/25	2513214	Seminar Information security and Data protection (Bachelor)	2 SWS	Seminar / 🗣	Volkamer, Raabe, Schiefer, Hennig, Werner, Ullrich
ST 2025	2400171	Regulating AI: from ethics to law	2 SWS	Seminar / 🗣	Gil Gasiola
ST 2025	2400177	Designing Data Governance of Digital Systems	2 SWS	Seminar / 🗣	Pathak
ST 2025	2400190	EU Digital Regulatory Framework	2 SWS	Seminar / 🗣	Zufall
ST 2025	2400204	(Generative) KI und Recht	2 SWS	Seminar / 🧩	Boehm
ST 2025	2400207	Rechtlicher Rahmen für die Europäische Datenökonomie	2 SWS	Seminar / 🗣	Sattler
ST 2025	2400208	Rechtlicher Rahmen für Künstliche Intelligenz	2 SWS	Seminar / 🗣	Sattler
Exams					
WT 24/25	7500035	Seminar: Legal Studies II			Zufall
WT 24/25	7500182	Seminar: Legal Studies II			Boehm, Raabe, Sattler
WT 24/25	7500232	Seminar Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection			Reussner
ST 2025	7500159	Seminar: Legal Studies I			Zufall
ST 2025	7500237	Seminar: Law and Legal Studies			Zufall

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Below you will find excerpts from events related to this course:

V Security and Privacy Awareness

2400125, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Within the framework of this interdisciplinary seminar, the topics security awareness and privacy awareness are to be considered from different perspectives. It deals with legal, information technology, psychological, social as well as philosophical aspects.

Important notes:

- Consider that legal-focused topics require you to speak and understand German legal texts
- The seminar is only for MASTER students (or Mastervorzug)
- The link to enrol is for every student, regardless of the study background

Dates (not final):

- Kick-Off: Tue, 22.10.2024, 11:30 Uhr, Raum 1C-03, Gebäude 5.20
- First version: 05.01.2025
- Final version: 23.02.2025
- Presentation: CW 12

Topics:

The advertised topics can be found in the wiwi portal [https://portal.wiwi.kit.edu/ys/8308]. They will be assigned after the kick-off.

V **EU Digital Regulatory Framework** **Seminar (S)**
2400184, WS 24/25, 2 SWS, Language: English, Open in study portal **On-Site**

Content
This class aims to provide an overview on the legal instruments forming the EU digital regulatory framework. Following its Digital Single Market Strategy, the EU has set up a new strategic programme for a "Digital Decade". Existing regulations like the General Data Protection Regulation (GDPR), or the E-Commerce Directive, are being complemented by a variety of new instruments that aim to set binding rules on online markets, to regulate data flows in various ways, but also to pioneer a legal framework on AI. Prominent instruments include the new AI Act, the Digital Services Act (DSA) and Digital Markets Act (DMA), the Data Act, Data Governance Act, or Open Data Directive.

The class will provide an overview on the existing framework: Which regulations and directives are relevant? How do they apply and interact which each other in a broader context?

Another objective is to provide students with the ability to read these legal instruments: How to access regulatory instruments that often have more than 100 pages (without having to read every single sentence)? How to gain a comprehensive, high-level understanding of the instrument? How to identify parts relevant to a particular legal problem?

The class will start with an introduction into EU law and regulatory instruments in general. Concrete guidance on reading, analysing and working with legal instruments in English will be given. Based on these instructions, students will be assigned legal instruments to present in the final unit along with a two-pages report.

Grades will be assigned based on the quality of these presentations and the report, as well as participation in the discussion (presentation: 40 %, two-pages report: 40 %, discussion: 20 %).

Organizational issues
WS 2024/25

Hierbei handelt es sich NICHT um eine Pro-Seminar, sondern um ein Seminar (aus Rechtswissenschaften).

Anmeldungen für das Seminar bitte NUR! über das WiWi-Portal!

***Für die Prüfung bitte NUR über CAS (Campus-Portal) anmelden!**

*Erläuterung: nach der für die Teilnahme am Seminar verbindlichen Teilnahme an der Einführungsveranstaltung bitte Anmeldung über das Campus-System (notwendig für die Erfassung der Note der Seminararbeit).

V **Regulating AI: from ethics to law** **Seminar (S)**
2400171, SS 2025, 2 SWS, Language: English, Open in study portal **On-Site**

Content
Credit points = ECTS

3 ECTS

Language:

English

Competency Goals:

Students comprehend the role of technology regulation.

They are able to identify different types of regulation and their impact on different stakeholders.

They know the main aspects of the regulation of AI systems.

They understand the foundations of the AI Act of the EU.

They know the content of AI principles and are able to assess their implementation in specific projects.

Content:

This seminar will provide an overview of the regulation of technologies and in particular the regulation of AI systems. After an introduction to forms of regulation, students will explore the different regulatory instruments from the perspective of the consolidated principles of AI: fairness, transparency, privacy, security and accountability. This will allow students to discuss how the principles and rules governing AI can be implemented in concrete cases. The seminar will cover the following topics:

- Introduction to technology regulation
- Objectives of regulation
- Types of regulation
- Challenges in regulating new / disruptive technologies
- Specific challenges in regulating AI
- Fragmented/vertical regulation of AI
- AI Act
- AI principles: fairness, transparency, privacy, security, and accountability
- The role of principles in regulating AI
    - Dealing with principles when developing and implementing AI systems

Competency certificate:

The assessment of this course is carried out by the following aspects, which will be considered in the grading (§ 4 Abs. 2 Nr. 3 SPO): term paper (approx. 5 pages), presentation (approx. 20 min.) and discussion.

The grading scale will be announced in the course. Students may redraw from the examination during the first two weeks after the topic has been communicated.

Organizational issues
Anmeldungen für das Seminar bitte NUR! über das WiWi-Portal!
***Für die Prüfung bitte NUR über CAS (Campus-Portal) anmelden!**

*ErläuterungNach der für die Teilnahme am Seminar verbindlichen Teilnahme an der Einführungsveranstaltung bitte Anmeldung über das Campus-System (notwendig für die Erfassung der Note der Seminararbeit).

Blockseminar im SoSe 2025 (2 Termine): Termine und Uhrzeit:

Donnerstag, 24.04.2025, 13:30 - 17:30 Uhr

Donnerstag, 10.07.2025, 13:30 - 17:30 Uhr.

Raum: jeweils im Seminarraum Nr. 313 (Geb. 07.08)**English:**Please register for the seminar ONLY via the WiWi-Portal!
*Please register for the exam ONLY via CAS (Campus-Portal)!

*ExplanationAfter attending the introductory event, which is mandatory for participation in the seminar, please register via the campus system (necessary for recording the grade of the seminar paper).

Block seminar in summer term 2024 (2 dates):

Dates and time:

Thursday, 24th April 2025, 13:30 - 17:30 h

Thursday, 10th July 2025, 13:30 - 17:30 h.

Room:each time in seminar room no. 313 (building 07.08)

Designing Data Governance of Digital Systems

2400177, SS 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
The latest regulations in the digital sector at EU level represent a highly topical and important regulatory instrument with enormous practical relevance for students of computer science and business informatics. The seminar not only enables students to acquire important knowledge in this area, but also to apply it specifically to the governance of digital systems and to learn the practical design of digital systems against the background of legal framework conditions.

Organizational issues
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***Explanation:after attending the introductory event,** which is mandatory for participation in the seminar**, please register via the campus system** (necessary for recording the grade of the seminar paper).

Due to the minimum number of text characters that can be used, please check ILIAS and the WiWi portal for details such as dates and location. Thank you.

EU Digital Regulatory Framework

2400190, SS 2025, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
Note:
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This class aims to provide an overview on the legal instruments forming the EU digital regulatory framework. Following its Digital Single Market Strategy, the EU has set up a new strategic programme for a "Digital Decade". Existing regulations like the General Data Protection Regulation (GDPR), or the E-Commerce Directive, are being complemented by a variety of new instruments that aim to set binding rules on online markets, to regulate data flows in various ways, but also to pioneer a legal framework on AI. Prominent instruments include the new AI Act (proposal), the Digital Services Act (DSA) and Digital Markets Act (DMA), the Data Act, Data Governance Act, or Open Data Directive.

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Organizational issues
Anmeldungen für das Seminar bitte NUR! über das WiWi-Portal!

***Für die Prüfung bitte NUR über CAS (Campus-Portal) anmelden!**

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***Termine im SoSe* 2025:**

Mittwoch, den 7. Mai 2025, 16-19 Uhr (Kick-off)

Donnerstag, den 17. Juli 2025, 14:00 - 18:00 Uhr (Präsentationen).

Raum:

jeweils im Seminarraum Nr. 313, Geb. 07.08.

English:

Please register for the seminar ONLY via the WiWi-Portal!

**Please register for the exam ONLY via CAS (Campus-Portal)!*

**Explanation: after attending the introductory event, which is mandatory for participation in the seminar, please register via Campus System (necessary for recording the grade of the seminar papers).*

Dates in summer term 2025:

Wednesday, 7 May 2025, 16-19h (kick-off)

Thursday, 17th July 2025, 14:00 - 18:00 h (presentations).

Room:

In seminar room no. 313, building 07.08.

T 3.521 Course: Sensor Systems [T-ETIT-100709]

Responsible: Dr. Wolfgang Menesklou
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	3 CP	graded	Each summer term	1

T 3.522 Course: Sensors [T-ETIT-101911]

Responsible: Dr. Wolfgang Menesklou
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each summer term	2

Events					
ST 2025	2304231	Sensors	2 SWS	Lecture / 🗣	Menesklou
Exams					
WT 24/25	7304231	Sensors			Menesklou
ST 2025	7304231	Sensors			Menesklou

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

T 3.523 Course: Service Design Thinking [T-WIWI-102849]

Responsible: Prof. Dr. Gerhard Satzger
Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	9 CP	graded	Irregular	5

Events					
WT 24/25	2595600	Service Design Thinking	2 SWS	Lecture / 🗣	Feldmann, Terzidis, Satzger
ST 2025	2595600	Service Design Thinking	2 SWS	Lecture / 🗣	Feldmann, Terzidis, Satzger
Exams					
ST 2025	7900319	Service Design Thinking			Satzger
ST 2025	7900320	Practical Seminar Service Innovation			Satzger

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Success is assessed in the form of an alternative exam assessment which consists of a case study, workshops, and a final presentation. The weighting of these components for the grade will be announced at the beginning of the course.

Prerequisites
None

Recommendations
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.

Additional Information
Due to practical project work as a component of the program, access is limited. The module (as well as the module component) spans two semesters. It starts in September every year and runs until end of June in the subsequent year. Entering the program is only possible at its beginning - after prior application in May/June. For more information on the application process and the program itself are provided in the module component description and the program's website (https://sdtkarlsruhe.de/). Furthermore, the lecturers provide an information event for applicants every year in May.

Below you will find excerpts from events related to this course:

V Service Design Thinking

2595600, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The Service Design Thinking program is much more than a normal course. Through this program, we provide the knowledge and skills that true innovators need. In this context, we train our participants in the human-centric innovation approach “Design Thinking”. In addition, participants work in small international and interdisciplinary teams on real innovation challenges from practice.

The teams are made up of students from KIT and another university from the global SUGAR network. These include, for example, the Hasso Plattner Institute in Potsdam, Trinity College in Dublin and the University of Science and Technology of China. The program includes visits to international events of the SUGAR Network, which are usually held in places known for their high level of innovation. At these events, our participants present their (interim) results to a large audience consisting of employees from the partner companies and the universities involved.

What students will learn:

- A comprehensive understanding of the globally recognized innovation approach “Design Thinking” as introduced and promoted by the Stanford University
- Development of new, creative solutions through extensive need finding, in particular with regard to the relevant service users
- to develop prototypes of the collected ideas early and independently, to test them and improve them iteratively, thereby solving the issue defined by the partner company
- to communicate, present and network in an interdisciplinary and international environment
- to apply the learned approach in the context of a real innovation project provided by a practical partner.

Course phases (roughly 4 weeks each):

- **Kick off:**
  Learning the basic method elements by solving an exercise challenge. Participation in the Global Kick-Off of the SUGAR Network consisting of method workshops, working on team challenges, networking with other universities and forming project teams for the challenges of the practical partners.
- **Design Space Exploration**:
  Exploring the problem space by questioning the given innovation challenge from practice. Familiarization with the topic area of the respective challenge. Gathering first impressions of the requirements and needs of people related to the problem.
- **Critical Function Prototype:**
  Building an intensive understanding of the needs of the target group of the respective challenge. Deriving critical functions from the customer's perspective that could help solve the overall problem. Building prototypes for the critical functions and testing them in real customer situations.
- **Dark Horse Prototype**:
  Reversal of assumptions and experiences made so far. The goal is to develop radically new and unconventional ideas. Implementation of the ideas into simple prototypes and subsequent testing.
- **Funky Prototype**:
  Integration of the individual successfully tested functions from the critical function and dark horse phase into solution concepts. These are also tested and further developed.
- **Functional Prototype**:
  Selection of successful funky prototypes and development of these towards high-resolution prototypes. The final solution approach for the project is written down in detail and feedback is obtained.
- **Final Prototype**:
  Implementing the final prototype and presenting it to the practical partner as well as the SUGAR Network.

Organizational issues
Bei der Vorlesung handelt es sich um eine zweisemestrige Veranstaltung, die jährlich im September startet.

Literature

- Design Thinking: Das Handbuch; Falk Uebernickel, Walter Brenner, Therese Naef, Britta Pukall, Bernhard Schindlholzer
- The Design Thinking Playbook: Mindful Digital Transformation of Teams, Products, Services, Businesses and Ecosystems; Michael Lewrick, Patrick Link, Larry Leifer
- The Design Thinking Toolbox: A Guide to Mastering the Most Popular and Valuable Innovation Methods; Michael Lewrick, Patrick Link, Larry Leifer
- Frame Innovation: Create New Thinking by Design (Design Thinking, Design Theory); Kees Dorst

V **Service Design Thinking** — **Lecture (V) On-Site**
2595600, SS 2025, 2 SWS, Language: English, Open in study portal

Content
The Service Design Thinking program is much more than a normal course. Through this program, we provide the knowledge and skills that true innovators need. In this context, we train our participants in the human-centric innovation approach “Design Thinking”. In addition, participants work in small international and interdisciplinary teams on real innovation challenges from practice.

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- **Critical Function Prototype:**
  Building an intensive understanding of the needs of the target group of the respective challenge. Deriving critical functions from the customer's perspective that could help solve the overall problem. Building prototypes for the critical functions and testing them in real customer situations.
- **Dark Horse Prototype**:
  Reversal of assumptions and experiences made so far. The goal is to develop radically new and unconventional ideas. Implementation of the ideas into simple prototypes and subsequent testing.
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  Implementing the final prototype and presenting it to the practical partner as well as the SUGAR Network.

Organizational issues
Bei der Vorlesung handelt es sich um eine zweisemestrige Veranstaltung, die jährlich im September startet.

Literature

- Design Thinking: Das Handbuch; Falk Uebernickel, Walter Brenner, Therese Naef, Britta Pukall, Bernhard Schindlholzer
- The Design Thinking Playbook: Mindful Digital Transformation of Teams, Products, Services, Businesses and Ecosystems; Michael Lewrick, Patrick Link, Larry Leifer
- The Design Thinking Toolbox: A Guide to Mastering the Most Popular and Valuable Innovation Methods; Michael Lewrick, Patrick Link, Larry Leifer
- Frame Innovation: Create New Thinking by Design (Design Thinking, Design Theory); Kees Dorst

T 3.524 Course: Service Operations and Cyber Security [T-WIWI-114109]

Responsible: Esther Mohr
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each summer term	1

Exams			
ST 2025	00030	Service Operations and Cyber Security	Nickel

Assessment
The assessment consists of a written paper and an oral exam of ca. 30-40 min.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-WIWI-102872 - Challenges in Supply Chain Management must not have been started.

Recommendations
Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

Additional Information
The number of course participants is limited to 12 due to the collaborative work in project teams. As a result of this limitation, registration is required before the course begins. Further information can be found on the course's website.
The event takes place irregularly. The planned lectures and courses for the next three years will be announced online.

T 3.525 Course: Services Marketing and B2B Marketing [T-WIWI-102806]

Responsible: Dr. Sven Feurer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	see Annotations	1

Assessment
The examination will be open to first-time writers for the last time in the 2021 summer semester.

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Additional Information
The course "Services Marketing and B2B Marketing" will be offered for the last time in winter semester 2020/21. For further information please contact the Marketing & Sales Research Group (marketing.iism.kit.edu).

T 3.526 Course: Simulation Game in Energy Economics [T-WIWI-108016]

Responsible: Dr. Massimo Genoese
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3,5 CP	graded	Each summer term	2

Events					
ST 2025	2581025	Simulation Game in Energy Economics	3 SWS	Lecture / Practice (/	Genoese, Zimmermann
Exams					
ST 2025	7981025	Simulation Game in Energy Economics			Fichtner

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Examination as written assignment and oral presentation (§4 (2), 1 SPO).

Prerequisites
None

Recommendations
Visiting the course "Introduction to Energy Economics"

Additional Information
The number of participants is limited.
There is a registration procedure via CAS followed by a selection of the participants.

Below you will find excerpts from events related to this course:

V Simulation Game in Energy Economics

2581025, SS 2025, 3 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content

- Introduction
- Agents and market places in the electricity industry
- Selected planning tasks of energy service companies
- Methods of modelling in the energy sector
- Agent-based simulation: The PowerACE model
- Simulation game: Simulation in energy economics (electricity and emission trading, investment decisions)

The lecture is structured in a theoretical and a practical part. In the theoretical part, the students are taught the basics to carry out simulations themselves in the practical part which comprises amongst others the simulation of the power exchange. The participants of the simulation game take a role as a power trader in the power market. Based on various sources of information (e.g. prognosis of power prices, available power plants, fuel prices), they can launch bids in the power exchange.

Assessment: presentation and written summary

Prerequisites: Basics in Energy economics ad markets are advantageous.

Organizational issues
CIP-Pool West, Raum 102, Geb. 06.41 - siehe Institutsaushang

Literature
Weiterführende Literatur:

Möst, D. und Genoese, M. (2009): Market power in the German wholesale electricity market. The Journal of Energy Markets (47–74). Volume 2/Number 2, Summer 2009

T 3.527 Course: Simulation of Coupled Systems [T-MACH-105172]

Responsible: Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	2

Exams			
WT 24/25	76T-MACH-105172	Simulation of Coupled Systems	Geimer

Assessment
The assessment consists of an oral exam (20 min) taking place in the recess period. The exam takes place in every semester. Re-examinations are offered at very ordinary examination date.

A registration in mandatory, the details will be announced on the webpages of the *Institute of Vehicle System Technology / Institute of Mobile Machines.* In case of too many applications, attendance will be granted based on pre-qualification.

Prerequisites
Required for the participation in the examination is the preparation of a report during the semester. The partial service with the code T-MACH-108888 must have been passed.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-MACH-108888 - Simulation of Coupled Systems - Advance must have been passed.

Recommendations

- Knowledge of ProE (ideally in actual version)
- Basic kniwledge of Matlab/Simulink
- Basic knowledge of dynamics of machnies
- Basic knowledge of hydraulics

Additional Information
After completion of course, students are able to:

- build a coupled simulation
- parametrize models
- perform simulations
- conduct troubleshooting
- check results for plausibility

The number of participants is limited.

Content:

- Basics of multi-body and hydralics simulation programs
- Possibilities of coupled simulations
- Modelling and Simulation of Mobile Machines using a wheel loader
- Documentation of the result in a short report

Literature:

Software guide books (PDFs)

Information about wheel-type loader specifications

Workload
120 hours

T 3.528 Course: Simulation of Coupled Systems - Advance [T-MACH-108888]

Responsible: Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework	0 CP	pass/fail	Each summer term	1

Assessment
Preparation of semester report

Prerequisites
none

T 3.529 Course: Site Management [T-BGU-103427]

Responsible: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	1,5 CP	graded	Each summer term	1 terms	1

Events					
ST 2025	6241801	Site Management	1 SWS	Lecture / Practice (/	N.N.
Exams					
ST 2025	8240103427	Site Management			Haghsheno

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
45 hours

T 3.530 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	5,5 CP	graded	Each winter term	2

Events					
WT 24/25	2581023	(Smart) Energy Infrastructure	4 SWS	Lecture / 🗣	Ardone, Pustisek
Exams					
WT 24/25	7900178	Smart Energy Infrastructure NEW			Fichtner
ST 2025	7900228	Smart Energy Infrastructure NEW			Fichtner

Legend: 🖥 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written exam (60 minutes). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Workload
165 hours

Below you will find excerpts from events related to this course:

V (Smart) Energy Infrastructure

2581023, WS 24/25, 4 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The lecture provides a techno-economic overview of different infrastructures of the energy system and their importance regarding the future energy system (“Energiewende”) – in particular

- for electricity:
  - the supply side (e.g. power plants)
  - the demand side (e.g. load structures of appliances, flexibilities) as well as
  - transport infrastructures (electricity grids)
- for fuel transportation:
  - pipeline infrastructures (focus on natural gas)
  - shipping of LNG
  - crude oil and oil product transportation
  - hydrogen transportation
  - comparison of potential energy carriers for global trade of renewable energy (e.g., hydrogen and its derivates, e-fuels, reactive metals)
- storage systems (e.g. batteries)

Additionally, the lecture provides a toolbox for energy system analysis such as an overview and classification of energy systems modelling approaches as well as the usage of scenario techniques for energy systems analysis.

The lecture also provides practical examples for the relevant methods presented.

Organizational issues
Blockveranstaltung am 14.11., 15.11., 28.11., 29.11., 05.12., 06.12., 12.12., 13.12.24

T 3.531 Course: Smart Grid Applications [T-WIWI-107504]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	see Annotations	2

Assessment
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

Recommendations
None

Additional Information
The lecture will no longer be offered from the coming winter semester 2023/24. It is only possible to take part in the main exam (first-time writer) and follow-up exam (repeater).

T 3.532 Course: Social Choice Theory [T-WIWI-102859]

Responsible: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	3

Events					
ST 2025	2520537	Social Choice Theory	2 SWS	Lecture / 🗣	Puppe, Kretz
ST 2025	2520539	Übung zu Social Choice Theory	1 SWS	Practice / 🗣	Puppe, Kretz
Exams					
ST 2025	7900039	Social Choice Theory (main date)			Puppe
ST 2025	7900045	Social Choice Theory (make-up date)			Puppe

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written exam (60 min.). The examination is offered every summer semester.

Prerequisites
None

Below you will find excerpts from events related to this course:

V Social Choice Theory

2520537, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
How should (political) candidates be elected? What are good ways of merging individual judgments into collective judgments? Social Choice Theory is the systematic study and comparison of how groups and societies can come to collective decisions.

The course offers a rigorous and comprehensive treatment of judgment and preference aggregation as well as voting theory. It is divided into two parts. The first part deals with (general binary) aggregation theory and builds towards a general impossibility result that has the famous Arrow theorem as a corollary. The second part treats voting theory. Among other things, it includes prooving the Gibbard-Satterthwaite theorem.

Workload:
Total workload for 4.5 credit points: approx. 135 hours
Attendance: 30 hours
Self-study: 105 hours

Literature
Main texts:

- Moulin, H. 1988. *Axioms of Cooperative Decision Making*. Cambridge University Press.
- List, C. and Puppe, C. 2009. Judgement Aggregation. A survey. In: *The Handbook of rational & social choice*. P. Anand, P. Pattanaik, C. Puppe (Eds.). Oxford University Press.

Secondary texts:

- Sen, A. K. 1970. *Collective Choice and Social Welfare*. Holden-Day.
- Gaertner, W. 2009. *A Primer in Social Choice Theory*. Revised edition. Oxford University Press.
- Gaertner, W. 2001. *Domain Conditions in Social Choice Theory*. Cambridge University Press.

T 3.533 Course: Social Dimensions of Energy Transitions [T-WIWI-113935]

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each summer term	1

Events					
ST 2025	2581051	Social Dimensions of Energy Transitions	2 SWS	Lecture / 🗣	Fichtner, Sloot
Exams					
ST 2025	7900271	Social Dimensions of Energy Transitions			Fichtner

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written examination (60 minutes). The examination is offered every semester and can be repeated at any regular examination date.

Workload
105 hours

Below you will find excerpts from events related to this course:

V Social Dimensions of Energy Transitions

Lecture (V)
On-Site

2581051, SS 2025, 2 SWS, Language: English, Open in study portal

Content
Course topics:

Part I: Household energy use

1. Introduction: Energy use and human behavior
2. Bounded rationality and bias in decision-making
3. Identifying and measuring sustainable energy behavior
4. Financial incentives and demand response
5. Energy feedback
6. Social influence and energy behavior

Part II: Energy technology acceptance

7. Social acceptance of energy technologies
8. Efficacy and energy policy support
9. NIMBYism and local support for energy technologies
10. Framing, moral hazard and geoengineering
11. Political orientation
12. Public perceptions of energy security

T 3.534 Course: Social Science A (WiWi) [T-GEISTSOZ-109048]

Responsible: Prof. Dr. Gerd Nollmann
Organisation: KIT Department of Humanities and Social Sciences
Part of: M-WIWI-104906 - Social Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each winter term	1

Events					
WT 24/25	5011011	Artificial intelligence in the research process	2 SWS	Seminar /	Banisch
WT 24/25	5011014	Advanced module:Technology and Future: Theories of prospective knowledge	2 SWS	Seminar /	Lösch
ST 2025	5000048	Socio-scientific Theories of Technology Assessment	2 SWS	Proseminar (/	Lösch
ST 2025	5011013	Experience of Violence at Universities	2 SWS	Seminar /	Mäs
ST 2025	5011019	Fake news in the crosshairs: strategies to protect society	2 SWS	Seminar /	Mäs
Exams					
WT 24/25	7400041	Social Science A (WiWi)			Nollmann, Lösch
ST 2025	7400379	Social Science A			Nollmann, Lösch
ST 2025	7400454	Social Science A (WiWi)			Nollmann, Lösch

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Below you will find excerpts from events related to this course:

V Artificial intelligence in the research process

5011011, WS 24/25, 2 SWS, Language: German, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
ChatGPT und andere Large Language Models (LLMs) transformieren unsere Gesellschaft auf vielen Ebenen. Auch Studium und Wissenschaft stehen vor tiefgreifenden Veränderungen. Im Seminar „Künstliche Intelligenz im Forschungsprozess“ nähern wir uns diesen neuen Technologien und erproben, wie sie sinnvoll eingesetzt werden können, um aktuelle Forschungsfragen zu adressieren. Wir orientieren uns dabei an den Methoden und Fragestellungen der Computer-gestützen Sozialwissenschaft (Computational Social Science) mit besonderem Fokus auf die Extraktion komplexer Bedeutungsmuster (z.B. Meinungen, Argumente, Narrative, etc.). Das Seminar ist als Blockseminar mit zwei Blöcken konzipiert (voraussichtlich Januar and März). Gemeinsam erarbeiten wir Themen für Miniprojekte, die zwischen den beiden Blöcken von den Studierenden bearbeitet werden. Im Vorfeld wird es eine online-Sitzung geben.

Organizational issues
Diese Veranstaltung wird als Blockseminar angeboten.
06.03.2025; 10-18 Uhr
14.03.2025; 10-17 Uhr
15.03.2025; 10-17 Uhr

V Experience of Violence at Universities

5011013, SS 2025, 2 SWS, Language: German, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content

In recent years, awareness of experiences of violence has changed significantly. Movements such as #MeToo and the International Day for the Elimination of Violence against Women have drawn attention to abuses worldwide. Much is also being done at universities such as KIT to educate people, create contact points and promote an organizational culture that does not tolerate violence. Nevertheless, the actual extent of the problem remains unclear.

In this seminar, we will use an online survey of students to explore the extent and nature of experiences of violence and their consequences at KIT. What experiences do students have themselves? Do they observe violence in others and how do they experience it?

Workload:

2 ECTS points can be earned. Participants must attend regularly, actively participate in the creation of an online questionnaire and prepare a final report in group work.

Lecturer:

Michael Mäs is a proud sociologist. His research deals with complex systems such as social networks on the Internet, which he investigates using formal approaches and quantitative methods of social research (surveys, network analysis, laboratory and field experiments). He has published in the fields of sociology, economics, physics, biology and computer science, among others.

T 3.535 Course: Social Science B (WiWi) [T-GEISTSOZ-109049]

Responsible: Prof. Dr. Gerd Nollmann
Organisation: KIT Department of Humanities and Social Sciences
Part of: M-WIWI-104906 - Social Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Each winter term	1

Events					
WT 24/25	5011011	Artificial intelligence in the research process	2 SWS	Seminar /	Banisch
WT 24/25	5011014	Advanced module:Technology and Future: Theories of prospective knowledge	2 SWS	Seminar /	Lösch
ST 2025	5000048	Socio-scientific Theories of Technology Assessment	2 SWS	Proseminar (/	Lösch
Exams					
WT 24/25	7400046	Social Science B (WiWi)			Nollmann, Lösch
ST 2025	7400455	Social Science B (WiWi)			Nollmann, Lösch

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Below you will find excerpts from events related to this course:

V Artificial intelligence in the research process

5011011, WS 24/25, 2 SWS, Language: German, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
ChatGPT und andere Large Language Models (LLMs) transformieren unsere Gesellschaft auf vielen Ebenen. Auch Studium und Wissenschaft stehen vor tiefgreifenden Veränderungen. Im Seminar „Künstliche Intelligenz im Forschungsprozess“ nähern wir uns diesen neuen Technologien und erproben, wie sie sinnvoll eingesetzt werden können, um aktuelle Forschungsfragen zu adressieren. Wir orientieren uns dabei an den Methoden und Fragestellungen der Computer-gestützen Sozialwissenschaft (Computational Social Science) mit besonderem Fokus auf die Extraktion komplexer Bedeutungsmuster (z.B. Meinungen, Argumente, Narrative, etc.). Das Seminar ist als Blockseminar mit zwei Blöcken konzipiert (voraussichtlich Januar and März). Gemeinsam erarbeiten wir Themen für Miniprojekte, die zwischen den beiden Blöcken von den Studierenden bearbeitet werden. Im Vorfeld wird es eine online-Sitzung geben.

Organizational issues
Diese Veranstaltung wird als Blockseminar angeboten.

06.03.2025; 10-18 Uhr

14.03.2025; 10-17 Uhr

15.03.2025; 10-17 Uhr

T 3.536 Course: Sociotechnical Information Systems Development [T-WIWI-109249]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	see Annotations	2

Exams			
WT 24/25	7900080	Advanced Lab Development of Sociotechnical Information Systems (Bachelor)	Sunyaev
WT 24/25	7900143	Advanced Lab Development of Sociotechnical Information Systems (Master)	Sunyaev

Assessment
The examination will no longer be offered from summer semester 2025.

Prerequisites
None.

Additional Information
The course is no longer offered.

Workload
135 hours

T 3.537 Course: Software Architecture and Quality [T-INFO-101381]

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each winter term	2

Exams			
WT 24/25	7500032	Software Architecture and Quality	Reussner
ST 2025	7500021	Software Architecture and Quality	Reussner

Assessment
The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 120 minutes.

Prerequisites
This lecture and the lectures *Component-Based Software Development* and *Software Architecture* are mutually exclusive.

T 3.538 Course: Software Engineering [T-WIWI-100809]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	3

Exams			
WT 24/25	79AIFB_SE_B1	Applied Informatics – Software Engineering	Oberweis
ST 2025	79AIFB_SE_B3	Applied Informatics - Software Engineering (Registration until 21.07.2025)	Oberweis

Assessment
The assessment consists of an 1h written exam in the first week after lecture period.

Prerequisites
None

T 3.539 Course: Software Quality Management [T-WIWI-102895]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	3

Events					
ST 2025	2511208	Software Quality Management	2 SWS	Lecture / 🗣	Oberweis
ST 2025	2511209	Übungen zu Software-Qualitätsmanagement	1 SWS	Practice / 🗣	Oberweis, Forell
Exams					
WT 24/25	79AIFB_STQM_C1	Software Quality Management			Oberweis
ST 2025	79AIFB_STQM_A5	Software Quality Management (Registration until 21.07.2025)			Oberweis

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
This lecture imparts fundamentals of active software quality management (quality planning, quality testing, quality control, quality assurance) and illustrates them with concrete examples, as currently applied in industrial software development. Keywords of the lecture content are: software and software quality, process models, software process quality, ISO 9000-3, CMM(I), BOOTSTRAP, SPICE, software tests.

Learning objectives:

Students

- explain the relevant quality models,
- apply methods to evaluate the software quality and evaluate the results,
- know the mail models of sofware 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 3.540 Course: Solar Thermal Energy Systems [T-MACH-106493]

Responsible: apl. Prof. Dr. Ron Dagan
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	4

Events					
WT 24/25	2189400	Solar Thermal Energy Systems	2 SWS	Lecture / 🗣	Dagan
Exams					
WT 24/25	76-T-MACH-106493	Solar Thermal Energy Systems			Dagan
ST 2025	76-T-MACH-106493	Solar Thermal Energy Systems			Dagan

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
oral exam of about 30 minutes

Prerequisites
none

Recommendations
Literature

1. "Solar Engineering of Thermal Processes", 4th Edition, J. Duffie &W. Beckman. Published by Wiley & Sons
2. “Heat Transfer”, 10th Edition, J. P. Holman Mc. Graw Hill publisher
3. “Fundamentals of classical Thermodynamics”, G. Van Wylen & R. E. Sonntag. Published by Wiley &Sons

Workload
120 hours

Below you will find excerpts from events related to this course:

V Solar Thermal Energy Systems

2189400, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content

The course deals with fundamental aspects of solar energy

1. Introduction to solar energy – global energy panorama

2. Solar energy resource-

Structure of the sun, Black body radiation, solar constant, solar spectral distribution

Sun-Earth geometrical relationship

3. Passive and active solar thermal applications.

4. Solar thermal systems- solar collector-types, concentrating collectors, solar towers,

Heat losses, efficiency

5. Selected topics on thermodynamics and heat transfer which are relevant for solar systems.

6. Introduction to Solar induced systems: Wind , Heat pumps, Biomass , Photovoltaic

7. Energy storage

The course deals with fundamental aspects of solar energy. Starting from a global energy panorama the course deals with the sun as a thermal energy source. In this context, basic issues such as the sun's structure, blackbody radiation and solar–earth geometrical relationship are discussed. In the next part, the lectures cover passive and active thermal applications and review various solar collector types including concentrating collectors and solar towers and the concept of solar tracking. Further, the collector design parameters determination is elaborated, leading to improved efficiency. This topic is augmented by a review of the main laws of thermodynamics and relevant heat transfer mechanisms.

The course ends with an overview on energy storage concepts which enhance practically the benefits of solar thermal energy systems.

The students get familiar with the global energy demand and the role of renewable energies learn about improved designs for using efficiently the potential of solar energy gain basic understanding of the main thermal hydraulic phenomena which support the work on future innovative applications will be able to evaluate quantitatively various aspects of the thermal solar systems.

Total 120 h, hereof 30 h contact hours and 90 h homework and self-studies

oral exam about 30 min.

Organizational issues

Die Vorlesung "Thermische Solarenergie" findet ab dem WS 2024/25 nicht mehr statt. Sie wurde zusammengelegt mit der engl. Version "Solar Thermal Energy Systems"

Literature

- "Solar Engineering of Thermal Processes "4th Edition, J. Duffie &W. Beckman. Published by Wiley & Sons.
- "Heat Transfer", 10th Edition, P. Holman Mc. Graw Hill publisher.
- "Fundamentals of classical Thermodynamics", G. Van Wylen & R. E. Sonntag. Published by Wiley & Sons

T 3.541 Course: Spatial Economics [T-WIWI-103107]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2561260	Spatial Economics	2 SWS	Lecture / 🗣	Ott
WT 24/25	2561261	Exercise for Spatial Economics	1 SWS	Practice / 🗣	Ott, Mirzoyan
Exams					
WT 24/25	7900075	Spatial Economics			Ott
WT 24/25	7900276	Spatial Economics			Ott

Legend: 💻 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Depending on further pandemic developments, the examination will be offered either as an open-book examination, or as a 60-minute written examination.

Prerequisites
None

Recommendations
Basic micro- and macroeconomic knowledge is required, such as that taught in the courses "Economics I" [2600012] and "Economics II" [2600014], attendance of which is strongly recommended (but not mandatory). An interest in quantitative-mathematical modeling is also a prerequisite. Attendance of the course "Introduction to Economic Policy" [2560280] is recommended.

Below you will find excerpts from events related to this course:

V Spatial Economics

2561260, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The course covers the following topics:

- Geography, trade and development
- Geography and economic theory
- Core models of economic geography and empirical evidence
- Agglomeration, home market effect, and spatial wages
- Applications and extensions

Learning objectives:

The student

- analyses how spatial distribution of economic activity is determined.
- uses quantitative methods within the context of economic models.
- has basic knowledge of formal-analytic methods.
- understands the link between economic theory and its empirical applications.
- understands to what extent concentration processes result from agglomeration and dispersion forces.
- is able to determine theory based policy recommendations.

Recommendations:

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. An interest in mathematical modeling is advantageous.

Workload:

The total workload for this course is approximately 135 hours.

- Classes: ca. 30 h
- Self-study: ca. 45 h
- Exam and exam preparation: ca. 60 h

Assessment:

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Literature
Steven Brakman, Harry Garretsen, Charles van Marrewijk (2009): The New Introduction to Geographical Economics, 2nd ed, Cambridge University Press.

Weitere Literatur wird in der Vorlesung bekanntgegeben.
(Further literature will be announced in the lecture.)

T 3.542 Course: Special Topics in Highway Engineering and Environmental Impact Assessment [T-BGU-101860]

Responsible: Dr.-Ing. Matthias Zimmermann
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each term	1 terms	1

Events					
ST 2025	6233804	Environmental Sustainability of Roads	1 SWS	Lecture / 🗣	Zimmermann

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
oral exam with 15 minutes

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.543 Course: Special Topics in Information Systems [T-WIWI-113724]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each term	1

Assessment
The assessment of this course is in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class.
Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The overall grade is composed as follows:

A total of 60 points can be achieved, of which

- A maximum of 30 points for the written documentation
- A maximum of 30 points for the practical component

In order to pass the success control, at least 15 points (written documentation / practical component) must be achieved.

Prerequisites
see below

Recommendations
None

Additional Information
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 3.544 Course: Special Topics in Information Systems [T-WIWI-113726]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each term	1

Assessment
The assessment of this course is in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class.
Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The overall grade is composed as follows:

A total of 60 points can be achieved, of which

- A maximum of 30 points for the written documentation
- A maximum of 30 points for the practical component

In order to pass the success control, at least 15 points (written documentation / practical component) must be achieved.

Prerequisites
see below

Recommendations
None

Additional Information
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 3.545 Course: Special Topics in Information Systems [T-WIWI-113723]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each term	1

Assessment
The assessment of this course is in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class.
Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The overall grade is composed as follows:

A total of 60 points can be achieved, of which

- A maximum of 30 points for the written documentation
- A maximum of 30 points for the practical component

In order to pass the success control, at least 15 points (written documentation / practical component) must be achieved.

Prerequisites
see below

Recommendations
None

Additional Information
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 3.546 Course: Special Topics in Information Systems [T-WIWI-113725]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each term	1

Exams			
WT 24/25	00084	How media influence sociopolitical perspectives in the U.S., with a focus on recent events, the Middle East, and societal perceptions	Weinhardt

Assessment
The assessment of this course is in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class.
Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The overall grade is composed as follows:

A total of 60 points can be achieved, of which

- A maximum of 30 points for the written documentation
- A maximum of 30 points for the practical component

In order to pass the success control, at least 15 points (written documentation / practical component) must be achieved.

Prerequisites
see below

Recommendations
None

Additional Information
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 3.547 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each term	2

Assessment
The assessment of this course is in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class.
Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The overall grade is composed as follows:

A total of 60 points can be achieved, of which

- A maximum of 30 points for the written documentation
- A maximum of 30 points for the practical component

In order to pass the success control, at least 15 points (written documentation / practical component) must be achieved.

Prerequisites
see below

Recommendations
None

Additional Information
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 3.548 Course: Startup Experience [T-WIWI-111561]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	6 CP	graded	Each term	1

Events					
WT 24/25	2545004	Startup Experience	4 SWS	Seminar / 🗣	Weimar, Martjan, Terzidis
ST 2025	2545004	Startup Experience	4 SWS	Seminar / 🗣	Weimar, Terzidis, Rosales Bravo, Martjan
Exams					
WT 24/25	7900186	Startup Experience			Terzidis
ST 2025	7900186	Startup Experience			Terzidis

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Alternative exam assessment. Details on the design of the examination performance of other types will be announced in the course.The grade is composed of a presentation and a written paper (plus any specified documentation, e.g. work results, experience diary, reflection).

Recommendations
Lecture Entrepreneurship already completed

Additional Information
The language in the seminar is English. The seminar contents will be published on the chair homepage.

Workload
180 hours

Below you will find excerpts from events related to this course:

V **Startup Experience** — **Seminar (S) On-Site**
2545004, WS 24/25, 4 SWS, Language: English, Open in study portal

Content
Content

In the Startup Experience seminar you will develop entrepreneurial competences that will enable you to build a new business. In an entrepreneurial project, you have three main objectives:

1. Identify and develop an opportunity. Who is your target customer and what problem or task does he or she have? How attractive and how big is this market?
2. How will you add value to it? How can you use specific resources, including technology, to develop a solution?
3. How can you design and set up a viable organisation? What business model do you propose to create, deliver and capture value?

Our primary focus is on digital healthcare ventures, granting you the opportunity to delve into the realm of entrepreneurship within the healthcare system. After gaining a deep understanding of healthcare needs, you will utilize creativity techniques to uncover potential business ideas that provide value for patients and doctors. Additionally, you will learn how to create viable business models, dive into health regulations, and pitch your idea to a jury.

Learning Objectives

After completing this course, the course participants will be able to:

- Work effectively in a cohesive team
- Understand the role of digital entrepreneurship in healthcare
- Apply creativity techniques to ideate
- Use utility analysis approaches to select promising solutions
- Develop a value proposition based on techniques like the value proposition canvas or the jobs-to-be-done method
- Apply advanced business modeling methods to develop a sound business concept
- Develop and deliver a concise presentation (“pitch”) to communicate your project
- Gain basic knowledge of healthcare regulations and reimbursement ways

Additional information:

Alternative exam assessment. The grade consists of the presentation and the written elaboration. Potentially, a ‘project diary’ of the seminar progress may be part of the deliverables (depends on tutor and will be communicated at the kick-off).

For a successful course completion, we expect you to submit a Business Plan with the following features:

- Scope: 9000 words,
- Sound and clear structure,
- Expression and spelling are correct
- Complete and correct references, quotations, etc.
- Visual elements are chosen appropriately
- Documentation and traceability of data acquisition, analysis and evaluation,
- Content is developed according to the course instructions.

Furthermore, we expect you to deliver a team Pitch.

- Duration: will be communicated (typically 5-10 minutes)
- Content: Introduction/Purpose; Problem; Solution; Business Model; Prototype; Competition; Management Team; Current Status and next steps,
- Layout and form: appropriate choice,
- Appearance: appropriate amount of visual elements,
- Data: well researched and organized visually
- Story Line: is sound; clear and convincing.

Organizational issues
Registration is via the Wiwi portal.

In the seminar you will work on a project in teams of max. 5 persons. The groups are formed in the seminar.

V **Startup Experience** **Seminar (S)**
2545004, SS 2025, 4 SWS, Language: English, Open in study portal **On-Site**

Content
Content

In the Startup Experience seminar you will develop entrepreneurial competences that will enable you to build a new business. In an entrepreneurial project, you have three main objectives:

1. Identify and develop an opportunity. Who is your target customer and what problem or task does he or she have? How attractive and how big is this market?
2. How will you add value to it? How can you use specific resources, including technology, to develop a solution?
3. How can you design and set up a viable organisation? What business model do you propose to create, deliver and capture value?

Our primary focus is on digital healthcare ventures, granting you the opportunity to delve into the realm of entrepreneurship within the healthcare system. After gaining a deep understanding of healthcare needs, you will utilize creativity techniques to uncover potential business ideas that provide value for patients and doctors. Additionally, you will learn how to create viable business models, dive into health regulations, and pitch your idea to a jury.

Learning Objectives

After completing this course, the course participants will be able to:

- Work effectively in a cohesive team
- Understand the role of digital entrepreneurship in healthcare
- Apply creativity techniques to ideate
- Use utility analysis approaches to select promising solutions
- Develop a value proposition based on techniques like the value proposition canvas or the jobs-to-be-done method
- Apply advanced business modeling methods to develop a sound business concept
- Develop and deliver a concise presentation (“pitch”) to communicate your project
- Gain basic knowledge of healthcare regulations and reimbursement ways

Additional information:

Alternative exam assessment. The grade consists of the presentation and the written elaboration. Potentially, a ‘project diary’ of the seminar progress may be part of the deliverables (depends on tutor and will be communicated at the kick-off).

For a successful course completion, we expect you to submit a Business Plan with the following features:

- Scope: 9000 words,
- Sound and clear structure,
- Expression and spelling are correct
- Complete and correct references, quotations, etc.
- Visual elements are chosen appropriately
- Documentation and traceability of data acquisition, analysis and evaluation,
- Content is developed according to the course instructions.

Furthermore, we expect you to deliver a team Pitch.

- Duration: will be communicated (typically 5-10 minutes)
- Content: Introduction/Purpose; Problem; Solution; Business Model; Prototype; Competition; Management Team; Current Status and next steps,
- Layout and form: appropriate choice,
- Appearance: appropriate amount of visual elements,
- Data: well researched and organized visually
- Story Line: is sound; clear and convincing.

Organizational issues
Registration is via the Wiwi-Portal.

Attention: The Startup X seminar overlaps in some instances with the entrepreneurship lecture. Please be aware of this before applying for the seminar.

In the seminar you will work on a project in teams of max. 5 persons. Team applications are welcome but not a prerequisite for participation. The seminars will be held in English.

T 3.549 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-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2521350	Statistical Modeling of Generalized Regression Models	2 SWS	Lecture	Heller
Exams					
WT 24/25	7900011	Statistical Modeling of Generalized Regression Models			Heller
WT 24/25	7900146 (WS23/24)	Statistical Modeling of generalized regression models			Heller

Assessment
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation.

Prerequisites
None

Recommendations
Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics" [2520016]

Below you will find excerpts from events related to this course:

V Statistical Modeling of Generalized Regression Models

2521350, WS 24/25, 2 SWS, Open in study portal **Lecture (V)**

Content
Learning objectives:

The student has profound knowledge of generalized regression models.

Requirements:

Knowledge of the contents covered by the course *Economics III: Introduction in Econometrics" [2520016].*

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

T 3.550 Course: Statistics I [T-WIWI-102737]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each summer term	1

Events					
ST 2025	2600008	Statistics I	4 SWS	Lecture / 🗣	Krüger
ST 2025	2600009	Tutorien zu Statistik I	2 SWS	Tutorial (	Krüger, Becker, N.N., Biegert
Exams					
WT 24/25	7900022	Statistics I			Grothe, Lerch
ST 2025	7900104	Statistics I			Krüger, Lerch

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Success is assessed in the form of a written examination (120 minutes). The examination is offered towards the end of the lecture period or at the beginning of the lecture-free period. The repeat examination is offered in the following semester.

Bonus: It is planned that, from the summer semester 2025, a grade bonus for the Statistics I exam can be earned through successful participation in the tutorials. If the grade of the written exam is between 4.0 and 1.3, the bonus will generally improve 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 lecture.

Prerequisites
None

Below you will find excerpts from events related to this course:

V Statistics I

2600008, SS 2025, 4 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

Learning objectives:

Students understand and apply

- basic concepts of statistical data exploration as well as
- basic definitions and theorems of probability theory.

Content:

A. Descriptive Statistics: univariate und bivariate analysis

B. Probability Theory: probability space, conditional and product probabilities

C. Random variables: location and shape parameters, dependency measures, concrete distribution models

Workload:

Total workload for 5 CP: approx. 150 hours

Attendance: 60 hours

Preparation and follow-up: 90 hours

Literature
Skript: Kurzfassung Statistik I. Dieses enthält ausführliche Angaben zu weiterführender Literatur.

T 3.551 Course: Statistics II [T-WIWI-102738]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Written examination	5 CP	graded	Each winter term	1

Events					
WT 24/25	2610020	Statistics II	4 SWS	Lecture / 🗣	Schienle
WT 24/25	2610021		2 SWS	Tutorial (	Krüger, Lerch, Becker
WT 24/25	2610022	PC-Praktikum zu Statistik II	2 SWS		Grothe, Lerch
Exams					
WT 24/25	7900001	Statistics II			Schienle, Lerch
ST 2025	7900082	Statistics II			Schienle, Lerch

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Success is assessed in the form of a written examination (120 minutes). The examination is offered towards the end of the lecture period or at the beginning of the lecture-free period. The repeat examination is offered in the following semester.
Bonus: It is planned that from the winter semester 2025/2026, a grade bonus for the Statistics II exam can be earned through successful participation in the tutorials. If the grade of the written examination is between 4.0 and 1.3, the bonus will generally improve 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 lecture.

Prerequisites
None

Recommendations
It ist recommended to attend the course *Statistics I* [2600008] before the course *Statistics II* [2610020].

Below you will find excerpts from events related to this course:

V Statistics II

2610020, WS 24/25, 4 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Learning objectives:

The student

- understands and applies the basic definitions and theorems of probability theory,
- transfers these theoretical foundations to problems in parametrical mathematical statistics.

Content:

D. Sampling and Estimation Theory: Sampling distributions, estimators, point and interval estimation
E. Test Theory: General Principles of Hypothesis Testing, Concrete 1- and 2-Sampling Tests
F. Regression analysis: Simple and multiple linear regression, statistical inference

Requirements:

It ist recommended to attend the course *Statistics I* [2600008] before the course *Statistics II* [2600020].

Workload:

Total workload: 150 hours (5.0 Credits).

Attendance: 30 hours

Preparation and follow-up: 90 hours

Literature
Skriptum: Kurzfassung Statistik II

Weiterführende Literatur:

Bamberg, G., Baur, F. und Krapp, M.: Statistik, 15. überarb. Auflage. Oldenbourg, München 2009, ISBN 978-3486590883.

Fahrmeir, L., Heumann, C., Künstler, R., Pigeot, I. und Tutz, G.: Statistik - Der Weg zur Datenanalyse, 8. Auflage. Springer Spektrum. Berlin 2016, ISBN 978-3-662-50371-3.

Mosler, K. und Schmid, F.: Beschreibende Statistik und Wirtschaftsstatistik, 4. akt. und verb. Auflage, Springer, Berlin 2009, ISBN 978-3642015564.

Mosler, K. und Schmid, F.: Wahrscheinlichkeitsrechnung und schließende Statistik, 4. verb. Aufl., Springer, Berlin 2011, ISBN 978-3642150098.

Stock, J.H. und Watson M.W.: Introduction to Econometrics, 3. Auflage, Prentice Hall 2014, ISBN 978-1292071312

Stocker, T.C. und Steinke I.: Statistik: Grundlagen und Methodik. De Gruyter Oldenbourg, Berlin 2016 ISBN-13: 978-3110353884.

T 3.552 Course: Stochastic Calculus and Finance [T-WIWI-103129]

Responsible: Dr. Mher Safarian
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104902 - Statistics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2521331	Stochastic Calculus and Finance	2 SWS	Lecture	Safarian
WT 24/25	2521332	Übungen zu Stochastic Calculus and Finance	2 SWS	Practice	Safarian
Exams					
WT 24/25	7900225	Stochastic Calculus and Finance			Safarian

Assessment
The assessment of this course consists of a written examination (§4(2), 1 SPOs, 180 min.).

Prerequisites
None

Additional Information
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 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)

Content
Learning objectives:

After successful completion of the course students will be familiar with many common methods of pricing and portfolio models in finance. Emphasis we be put on both finance and the theory behind it**.**

Content:

The course will provide rigorous yet focused training in stochastic calculus and mathematical finance. Topics to be covered:

1. Stochastic Calculus: Stochastic Processes, Brownian Motion and Martingales, Entropy, Stopping Times, Local martingales, Doob-Meyer Decomposition, Quadratic Variation, Stochastic Integration, Ito Formula, Girsanov Theorem, Jump-diffusion Processes, Stable and Levy processes.
2. Mathematical Finance: Pricing Models, The Black-Scholes Model, State prices and Equivalent Martingale Measure, Complete Markets and Redundant Security Prices, Arbitrage Pricing with Dividends, Term-Structure Models (One Factor Models, Cox-Ingersoll-Ross Model, Affine Models), Term-Structure Derivatives and Hedging, Mortgage-Backed Securities, Derivative Assets (Forward Prices, Future Contracts, American Options, Look-back Options), Incomplete Markets, Markets with Transaction Costs, Optimal Portfolio and Consumption Choice (Stochastic Control and Merton continuous time optimization problem, CAPM), Equilibrium models, Numerical Methods.

Workload:

Total workload for 4.5 CP: approx. 135 hours
Attendance: 30 hours
Preparation and follow-up: 65 hours

Organizational issues
Blockveranstaltung, Termine werden über Ilias bekannt gegeben

Literature

- Dynamic Asset Pricing Theory, Third Edition by D. Duffie, Princeton University Press, 1996
- Stochastic Calculus for Finance II: Continuous-Time Models by S. E. Shreve, Springer, 2003
- Stochastic Finance: An Introduction in Discrete Time by H. Föllmer, A. Schied, de Gruyter, 2011
- Methods of Mathematical Finance by I. Karatzas, S. E. Shreve, Springer, 1998
- Markets with Transaction Costs by Yu. Kabanov, M. Safarian, Springer, 2010
- Introduction to Stochastic Calculus Applied to Finance by D.Lamberton, B. Lapeyre, Chapman&Hall,1996

T 3.553 Course: Strategic Management [T-WIWI-113090]

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each summer term	1

Events					
ST 2025	2577900	Strategic Management	2 SWS	Lecture / 🗣	Lindstädt
Exams					
WT 24/25	7900199	Strategic Management			Lindstädt
ST 2025	7900067	Strategic Management			Lindstädt

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written exam (60 min) taking place at the beginn of the recess period (according to §4 (2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Below you will find excerpts from events related to this course:

V **Strategic Management** — **Lecture (V) On-Site**
2577900, SS 2025, 2 SWS, Language: German, Open in study portal

Content
Students learn central concepts of strategic management along the ideal-typical strategy process. An overview of fundamental frameworks and models will be provided and an action-oriented integration performance will be achieved through the transfer of theory to practical issues.

Through intensive exposure to real-world case studies, students will be encouraged to learn and apply strategic measures in a targeted manner in the real business world. The course features an action-oriented approach and provides students with a realistic understanding of the possibilities and limitations of rational design approaches.

Content in Keywords:

- Corporate governance and strategic management: concepts, levels, process.
- Strategic analysis: internal and external analysis
- Competitive strategy: formulation, evaluation and selection of strategic action alternatives at business unit level
- Strategic interaction and strategic commitment
- Corporate strategy: diversification strategy, M&A and management of the corporate portfolio
- Implementation of strategies in companies

Structure:

Lectures in the course are available to students online as recordings, while class dates are reserved for active discussion of real-world case studies.

Learning Objectives:

Upon completion of the course, students will be able to,

- Prepare strategic decisions along the ideal strategic process in a practical setting,
- Identify sources of competitive advantage,
- Explain interrelationships of companies in competition,
- Evaluate the portfolio management of companies,
- To classify actions and decisions of companies strategically,
- Apply knowledge from theoretical frameworks to the analysis of real-life situations.

Recommendations:

None.

Workload:

Total workload for 3.5 credit hours: approximately 105 hours.

Attendance: 30 hours

Self-study: 75 hours

Competence Certificate:

Success is assessed in the form of a written examination (60 minutes) (in accordance with §4(2), 1 SPO) at the beginning of the lecture-free period of the semester. The examination is offered every semester and can be repeated at any regular examination date.

A bonus can be earned by successfully participating in the exercises. If the grade of the exam 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 lecture.

Literature

- Pidun, U.: *Corporate Strategy: Theory and Practice*. Springer-Gabler, Wiesbaden 2019.
- Lindstädt, H.; Hauser, R.: *Strategische Wirkungsbereiche des Unternehmens*. Gabler, Wiesbaden 2004.
- Grant, R.M.: *Contemporary Strategy Analysis, 10. Aufl., Wiley 2018.*

Die relevanten Auszüge und zusätzliche Quellen werden in der Veranstaltung bekannt gegeben.

T 3.554 Course: Strategic Transport Planning [T-BGU-103426]

Responsible: Volker Waßmuth
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	3 CP	graded	Each term	1 terms	2

Events					
ST 2025	6232808	Strategic Traffic Planning	2 SWS	Lecture / 🗣	Waßmuth
Exams					
WT 24/25	8240103426	Strategic Transport Planning			Vortisch
ST 2025	8240103426	Strategic Transport Planning			Vortisch

Legend: 🖥 Online, 🖥🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.555 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Irregular	1

Events					
WT 24/25	2577921	Strategy and Management Theory: Developments and "Classics" (Master)	2 SWS	Seminar / 🗣	Lindstädt
Exams					
WT 24/25	7900120	Strategy and Management Theory: Developments and “Classics”			Lindstädt

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

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 conclusion meeting. Details on the design of the performance review will be announced during the lecture.

Prerequisites
None

Recommendations
Basic knowledge as conveyed in the bachelor module „Strategy and Organization“ is recommended.

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V Strategy and Management Theory: Developments and "Classics" (Master)

Seminar (S)
On-Site

2577921, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
This course covers highly topical issues of great relevance to the management of organizations. Students will be enabled to take strategic management positions. By applying appropriate models from the fields of strategy and management - or models developed in-house - participants will learn to evaluate the strategic starting position of an organization and derive precise and well-founded recommendations for action based on this.

This course offers students the opportunity to explore current management issues and sharpen their skills in strategic analysis and evaluation. Through intensive collaboration and practical application of the knowledge learned, students are optimally prepared for the demands and challenges of modern business management.

Structure

The course begins with an overarching theme, based on which students are divided into groups of two. The core of the course consists of the preparation of a written paper as well as the presentation and discussion of the results.

Learning Objectives

Upon completion of the course, students will be able to,

- analyze complex business situations, think strategically and derive sound management decisions.
- compose clear and convincing written papers that accurately present the analyses and recommendations developed.
- present results in an engaging manner and actively participate in substantive discussions.

Recommendations:

Prior attendance of the Bachelor's module "Strategy and Organization" or another module with comparable content at another university is recommended.

Workload:

Total effort approx. 90 hours

Attendance time: 15 hours

Preparation and follow-up: 75 hours

Examination and preparation: not applicable

Verification:

The success control according to § 4(2), 3 SPO is done by writing a scientific paper and a presentation of the results of the paper in the context of a final event. Details on the design of the performance review will be announced during the lecture.

Annotation:

The course is admission restricted. In case of prior admission to another course in the module "Strategy and Management: Advanced Topics" [M-WIWI-103119], participation in this course is guaranteed. For more information on the application process, see the IBU website.

Exams are offered at least every other semester, so the entire module can be completed in two semesters.

Organizational issues
Termin am 22. Januar 2025 findet im Raum 2A-12.1 im Gebäude 05.20 am IBU statt.

T 3.556 Course: Structural and Phase Analysis [T-MACH-102170]

Responsible: Dr.-Ing. Susanne Wagner
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Exams			
WT 24/25	76-T-MACH-102170	Structural and Phase Analysis	Wagner, Hinterstein
ST 2025	76-T-MACH-102170	Structural and Phase Analysis	Wagner

Assessment
Oral examination

Prerequisites
none

T 3.557 Course: Superhard Thin Film Materials [T-MACH-102103]

Responsible: Prof. Sven Ulrich
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	3

Events					
WT 24/25	2177618	Superhard Thin Film Materials	2 SWS	Lecture / 🗣	Ulrich
Exams					
WT 24/25	76-T-MACH-102103	Superhard Thin Film Materials			Ulrich
ST 2025	76-T-MACH-102103	Superhard Thin Film Materials			Ulrich

Legend: 🖥 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
oral examination (ca. 30 Minuten)

Prerequisites
none

Additional Information
The course is offered in German

Workload
120 hours

Below you will find excerpts from events related to this course:

V Superhard Thin Film Materials

2177618, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
oral examination (about 30 min), no tools or reference materials

Teaching Content:

Introduction

Basics

Plasma diagnostics

Particle flux analysis

Sputtering and ion implantation

Computer simulations

Properties of materials, thin film deposition technology,
thin film analysis and modelling of superhard materials

Amorphous hydrogenated carbon

Diamond like carbon

Diamond

Cubic Boronnitride

Materials of the system metall-boron-carbon-nitrogen-silicon

regular attendance: 22 hours
self-study: 98 hours

Superhard materials are solids with a hardness higher than 4000 HV 0,05. The main topics of this lecture are modelling, deposition, characterization and application of superhard thin film materials.

Recommendations: none

Organizational issues
Falls die Vorlesung online stattfinden muss, bitte um Anmeldung unter sven.ulrich@kit.edu bis zum 22.10.24.

Den entsprechenden MS Teams Link erhalten Sie dann per E-Mail am 23.10.24.

Literature
G. Kienel (Herausgeber): Vakuumbeschichtung 1 - 5, VDI Verlag, Düsseldorf, 1994

Abbildungen und Tabellen werden verteilt; Copies with figures and tables will be distributed

T 3.558 Course: Supplement Enterprise Information Systems [T-WIWI-110346]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each term	1

Assessment
The assessment of this course is a written or (if necessary) oral examination.

Prerequisites
None

Additional Information
This course can be used in particular for the acceptance of external courses whose content is in the broader area of applied informatics, but is not equivalent to another course of this topic.

Workload
135 hours

T 3.559 Course: Supplement Software- and Systemsengineering [T-WIWI-110372]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each term	1

Assessment
The assessment of this course is a written or (if necessary) oral examination.

Prerequisites
None

Additional Information
This course can be used in particular for the acceptance of external courses whose content is in the broader area of software and systems engineering, but cannot assigned to another course of this topic.

T 3.560 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	3,5 CP	graded	Each summer term	1

Events					
ST 2025	2581961	Supply Chain Management with Advanced Planning Systems	2 SWS	Lecture / 🗣	Göbelt, Bosch
Exams					
WT 24/25	7981961	Supply Chain Management with Advanced Planning Systems			Schultmann
ST 2025	7981961	Supply Chain Management with Advanced Planning Systems			Schultmann

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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.

Prerequisites
None

Recommendations
None

Below you will find excerpts from events related to this course:

V Supply Chain Management with Advanced Planning Systems

2581961, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
This lecture deals with supply chain management from a practitioner's perspective with a special emphasis Advanced Planning Systems (APS) and the planning domain. The software solution SAP SCM, one of the most widely used Advanced Planning Systems, is used as an example to show functionality and application of an APS in practice.

First, the term supply chain management is defined and its scope is determined. Methods to analyze supply chains as well as indicators to measure supply chains are derived. Second, the structure of an APS (advanced planning system) is discussed in a generic way. Later in the lecture, the software solution SAP SCM is mapped to this generic structure. The individual planning tasks and software modules (demand planning, supply network planning / sales & operations planning, production planning / detailed scheduling, deployment, transportation planning, global available-to-promise) are presented by discussing the relevant business processes, providing academic background, describing typical planning processes and showing the user interface and user-related processes in the software solution. At the end of the lecture, implementation methodologies and project management approaches for SAP SCM are covered.

Contents

1. Introduction to Supply Chain Management

1.1. Supply Chain Management Fundamentals

1.2. Supply Chain Management Analytics

2. Structure of Advanced Planning Systems

3. SAP SCM

3.1. Introduction / SCM Solution Map

3.2. Demand Planning

3.3. Supply Network Planning / Sales & Operations Planning

3.4. Production Planning and Detailed Scheduling

3.5. Deployment

3.6. Transportation Planning / Global Available to Promise

3.7. Cloud-based Supply Chain Planning

4. SAP SCM in Practice

4.1. Project Management and Implementation

4.2. SAP Implementation Methodology

Literature
will be announced in the course

T 3.561 Course: Sustainable Production Economics [T-MACH-111859]

Responsible: Prof. Dr.-Ing. Kai Furmans
Prof. Dr.-Ing. Gisela Lanza
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	5 CP	graded	Each winter term	1 terms	2

Events					
WT 24/25	2149616	Sustainable Production Economics	4 SWS	Lecture / Practice (/	Lanza
Exams					
WT 24/25	76-T-MACH-111859	Sustainable Production Economics			Furmans, Lanza
ST 2025	76-T-MACH-111859	Sustainable Production Economics			Furmans, Lanza

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
written exam (duration: 90 min)

Additional Information
The course is offered in German.

Workload
150 hours

Below you will find excerpts from events related to this course:

V Sustainable Production Economics

2149616, WS 24/25, 4 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
The lecture conveys an overall understanding of operational production management with special consideration of aspects of sustainability as well as an application-oriented understanding of the fundamental issues and methods in industrial companies. Through exercises as well as a business game synchronous to the lecture, the taught contents are deepened through application, so that the participants can apply them directly in their later professional environment.

Learning Outcomes:

After successful completion of the course, the students are able …

- to discuss, alone and in a team, the terms, contexts and models by which manufacturing companies are described;
- to discuss typical problems of manufacturing companies, especially against the background of current and future challenges of ecological, social and economic sustainability;
- to apply the most important methods for efficient and sustainable management in industrial enterprises, in particular in the sense of the circular economy, in a problem-related manner;
- to select and justify decision-making alternatives by applying the methods learned;
- to critically question the methods learned and to independently acquire methods that go beyond this.

Workload:

regular attendance: 42 hours
self-study: 108 hours

Organizational issues
Vorlesungstermine montags, Übungstermine freitags.
Bekanntgabe der konkreten Übungstermine erfolgt in der ersten Vorlesung

Literature
Medien:
Skript zur Veranstaltung wird über ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in ilias (https://ilias.studium.kit.edu/).

T 3.562 Course: Systematic Materials Selection [T-MACH-100531]

Responsible: Dr.-Ing. Stefan Dietrich
Prof. Dr.-Ing. Volker Schulze

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	5

Events					
ST 2025	2174576	Systematic Materials Selection	3 SWS	Lecture / 🗣	Dietrich
ST 2025	2174577	Excercises in Systematic Materials Selection	1 SWS	Practice / 🗣	Dietrich
Exams					
WT 24/25	76-T-MACH-100531	Systematic Materials Selection			Dietrich
ST 2025	76-T-MACH-100531	Systematic Materials Selection			Dietrich

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment is carried out as a written exam of 2 h.

Prerequisites
none

Recommendations
Basic knowledge in materials science, mechanics and mechanical design due to the lecture Materials Science I/II.

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from events related to this course:

V Systematic Materials Selection

2174576, SS 2025, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Important aspects and criteria of materials selection are examined and guidelines for a systematic approach to materials selection are deeloped. The following topics are covered:

- Information and introduction
- Necessary basics of materials
- Selected methods / approaches of the material selection
- Examples for material indices and materials property charts
- Trade-off and shape factors
- Sandwich materials and composite materials
- High temperature alloys
- Regard of process influences
- Material selection for production lines
- Incorrect material selection and the resulting consequences
- Abstract and possibility to ask questions

learning objectives:
The students are able to select the best material for a given application. They are proficient in selecting materials on base of performance indices and materials selection charts. They can identify conflicting objectives and find sound compromises. They are aware of the potential and the limits of hybrid material concepts (composites, bimaterials, foams) and can determine whether following such a concept yields a useful benefit.
requirements:

WiIng SPO 2007 (B.Sc.)

The course Material Science I [21760] has to be completed beforehand.

WiIng (M.Sc.)

The course Material Science I [21760] has to be completed beforehand.

workload:

The workload for the lecture is 120 h per semester and consists of the presence during the lecture (30 h) as well as preparation and rework time at home (30 h) and preparation time for the oral exam (60 h).

Literature
Vorlesungsskriptum; Übungsblätter; Lehrbuch: M.F. Ashby, A. Wanner (Hrsg.), C. Fleck (Hrsg.);
Materials Selection in Mechanical Design: Das Original mit Übersetzungshilfen
Easy-Reading-Ausgabe, 3. Aufl., Spektrum Akademischer Verlag, 2006
ISBN: 3-8274-1762-7

Lecture notes; Problem sheets; Textbook: M.F. Ashby, A. Wanner (Hrsg.), C. Fleck (Hrsg.);
Materials Selection in Mechanical Design: Das Original mit Übersetzungshilfen
Easy-Reading-Ausgabe, 3. Aufl., Spektrum Akademischer Verlag, 2006
ISBN: 3-8274-1762-7

T 3.563 Course: Systems of Remote Sensing, Prerequisite [T-BGU-101637]

Responsible: Prof. Dr. Jan Cermak
Prof. Dr.-Ing. Stefan Hinz
Dr.-Ing. Uwe Weidner

Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Coursework	1 CP	pass/fail	Each summer term	1

Events					
ST 2025	6020242	Remote Sensing Systems, Excercise	1 SWS	Practice / 🗣	Bork-Unkelbach
Exams					
ST 2025	8284101637	Systems of Remote Sensing, Prerequisite			Hinz, Andersen, Pauli, Cermak

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
30 hours

T 3.564 Course: Tactical and Operational Supply Chain Management [T-WIWI-102714]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	3

Events					
ST 2025	2550486	Tactical and operational SCM	3 SWS	Lecture /	Nickel
ST 2025	2550487	Übungen zu Taktisches und operatives SCM	1.5 SWS	Practice /	Pomes, Hoffmann
Exams					
WT 24/25	7900104	Tactical and Operational Supply Chain Management			Nickel
ST 2025	7900239	Tactical and Operational Supply Chain Management			Nickel

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Assessment
Depending on further pandemic developments, the exam will be offered either as an open-book exam, or as a written exam (60 min).

The exam takes place in every semester.

Prerequisite for admission to examination is the successful completion of the online assessments.

Prerequisites
Prerequisite for admission to examination is the succesful completion of the online assessments.

Recommendations
None

Additional Information
The lecture is held in every summer term. The planned lectures and courses for the next three years are announced online.

Below you will find excerpts from events related to this course:

V Tactical and operational SCM

2550486, SS 2025, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The planning of material transport is an essential element of Supply Chain Management. By linking transport connections across different facilities, the material source (production plant) is connected with the material sink (customer). The general supply task can be formulated as follows (cf. Gudehus): For given material flows or shipments, choose the optimal (in terms of minimal costs) distribution and transportation chain from the set of possible logistics chains, which asserts the compliance of delivery times and further constraints. The main goal of the inventory management is the optimal determination of order quantities in terms of minimization of fixed and variable costs subject to resource constraints, supply availability and service level requirements. Similarly, the problem of lot sizing in production considers the determination of the optimal amount of products to be produced in a time slot. The course includes an introduction to basic terms and definitions of Supply Chain Management and a presentation of fundamental quantitative planning models for distribution, vehicle routing, inventory management and lot sizing. Furthermore, case
studies from practice will be discussed in detail.

Passing the online exercise is a prerequisite for admission to the exam.

Literature
Weiterführende Literatur

- Domschke: Logistik: Transporte, 5. Auflage, Oldenbourg, 2005
- Domschke: Logistik: Rundreisen und Touren, 4. Auflage, Oldenbourg, 1997
- Ghiani, Laporte, Musmanno: Introduction to Logistics Systems Planning and Control, Wiley, 2004
- Gudehus: Logistik, 3. Auflage, Springer, 2005
- Simchi-Levi, Kaminsky, Simchi-Levi: Designing and Managing the Supply Chain, 3rd edition, McGraw-Hill, 2008
- Silver, Pyke, Peterson: Inventory management and production planning and scheduling, 3rd edition, Wiley, 1998

T 3.565 Course: Tax Law [T-INFO-111437]

Responsible: Detlef Dietrich
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each summer term	1

Events					
ST 2025	24646	Tax Law	2 SWS	Lecture / 🗣	Dietrich
Exams					
WT 24/25	7500062	Tax Law			Sattler, Matz
ST 2025	7500120	Tax Law			Sattler

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

T 3.566 Course: Team Project Management and Technology [T-WIWI-110968]

Responsible: Prof. Dr. Martin Klarmann
Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	9 CP	graded	Each term	1 terms	1

Events					
WT 24/25	2571176	Team Project Management and Technology	6 SWS	Project (P / ⛭	Klarmann, Mädche
ST 2025	2571176	Teamprojekt Wirtschaft und Technologie		Project (P / ⛭	Klarmann, Mädche
Exams					
WT 24/25	7900207	Team Project Management and Technology			Mädche, Klarmann
ST 2025	7900048	Team Project Management and Technology			Klarmann, Mädche

Legend: 🖥 Online, ⛭ Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
Alternative exam assessment. The basis for grading is the documents produced, the presentations during the course of the project, the artifact to be produced (e.g. algorithm, method, model, software, component) and the final presentation.

Workload
270 hours

T 3.567 Course: Team Project Management and Technology (BUS/ENG) [T-WIWI-110977]

Responsible: Prof. Dr. Martin Klarmann
Prof. Dr. Alexander Mädche

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Expansion	Version
Examination of another type	9 CP	graded	Each term	1 terms	1

Events					
WT 24/25	2571176	Team Project Management and Technology	6 SWS	Project (P / ⛭	Klarmann, Mädche
ST 2025	2571176	Teamprojekt Wirtschaft und Technologie		Project (P / ⛭	Klarmann, Mädche
Exams					
WT 24/25	7900208	Team Project Management and Technology (BUS/ENG)			Mädche, Klarmann
ST 2025	7900048	Team Project Management and Technology			Klarmann, Mädche

Legend: 🖳 Online, ⛭ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Alternative exam assessment. The basis for grading is the documents produced, the presentations during the course of the project, the artifact to be produced (e.g. algorithm, method, model, software, component) and the final presentation.

Workload
270 hours

T 3.568 Course: Telecommunications and Internet – Economics and Policy [T-WIWI-113147]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2561232	Telecommunication and Internet - Economics and Policy	2 SWS	Lecture / 🧩	Mitusch
WT 24/25	2561233	Excercises to Telecommunication and Internet - Economics and Policy	1 SWS	Practice / 🧩	Mitusch, Corbo
Exams					
WT 24/25	7900246	Telecommunications and Internet – Economics and Policy			Mitusch
ST 2025	7900276	Telecommunications and Internet – Economics and Policy			Mitusch

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Students' understanding and knowledge will be assessed through either an oral or a written exam. The actual method used will be announced during the course. The course takes place every winter term, and exams are offered two times a year, in March and in September.

Recommendations
Basic knowledge of microeconomics is a precondition. Further knowledge of industrial economics or networks economics is useful, but not necessary. No prior knowledge of telecommunications or internet technologies is required.

Additional Information
Disclaimer:
German wording is sometimes provided in parallel. Some German original literature is used (especially official and legislative texts) where we will try to provide English translations in parallel.

Workload
135 hours

Below you will find excerpts from events related to this course:

V Telecommunication and Internet - Economics and Policy

2561232, WS 24/25, 2 SWS, Language: German/English, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
Description:

The course provides students with a comprehensive understanding of the economic principles, dynamics, and policies that govern the telecommunication and internet industries and markets. It focuses on the infrastructure of the internet, both physical and logical.

Course Objectives:

Understand the telecommunication and internet landscape: Students will be introduced to the historical development, evolution, and current state of the telecommunication and internet industries. This includes technology, industrial organization, regulation, and other policies. Students will explore the emergence of modern telecommunication networks, the birth of the internet, and key milestones that have shaped the global communication landscape.

Examine network economics: Students will explore the unique economic characteristics of telecommunications networks, including network effects, economies of scale, the implications for investment decisions and market entry barriers, and regulatory responses.

Analyse market structures and competition policies: Students will dive into the various market structures that exist within the telecommunication and internet industries, including: access to the internet by users, access to the infrastructure by firms, economic interactions between the autonomous systems (i.e. sub-networks) and other players (like internet exchange points) of the internet, implications for quality of services and network neutrality. Emphasis will be placed on competitiveness of markets, resp. market power, on the role of regulation, and how they impact market dynamics.

Investigate infrastructure investment and policy: The course will address the significant role of infrastructure investment in the telecommunication and internet sectors. Students will analyse the economic drivers behind infrastructure construction, government policies, and regulatory frameworks that influence investment decisions.

Address emerging trends: The course will address the latest trends and technologies in telecommunication and the internet, such as 5G, Internet of Things (IoT), and cloud computing, content delivery networks, and their economic implications.

Assess platform economics: The role of digital platforms in the telecommunication and internet industries will be addressed. Students will understand platform business models and the economics of multisided markets. In this context, the "hypergiants" of the internet get into the focus as well as the challenges and opportunities they present.

Teaching Methodology:

The course will adopt a combination of lectures, case studies, and guest lectures from (industry) experts. Real-world examples will be used to illustrate economic principles in action within the telecommunication and internet sectors. A few economic models will be analysed, but most of the issues will be addressed verbally.

T 3.569 Course: Telecommunications Law [T-INFO-101309]

Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each summer term	1

Events					
ST 2025	2424632	Telekommunikationsrecht	2 SWS	Lecture / 🗣	Döveling
Exams					
WT 24/25	7500049	Telecommunications Law			Zufall
ST 2025	7500085	Telecommunications Law			Zufall

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

T 3.570 Course: Tendering, Planning and Financing in Public Transport [T-BGU-101005]

Responsible: Prof. Dr.-Ing. Peter Vortisch
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each term	1 terms	1

Events					
ST 2025	6232807	Competition, Planning and Financing in Public Transport	2 SWS	Lecture / 🗣	Pischon
Exams					
ST 2025	8245101005	Tendering, Planning and Financing in Public Transport			Vortisch

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
oral exam, appr. 20 min.

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
90 hours

T 3.571 Course: Tires and Wheel Development for Passenger Cars [T-MACH-102207]

Responsible: Prof. Dr.-Ing. Günter Leister
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Events					
ST 2025	2114845	Tires and Wheel Development for Passenger Cars	2 SWS	Lecture / 🗣	Leister
Exams					
WT 24/25	76-T-MACH-102207	Tires and Wheel Development for Passenger Cars			Leister
ST 2025	76-T-MACH-102207	Tires and Wheel Development for Passenger Cars			Leister

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Oral Examination

Duration: 30 up to 40 minutes

Auxiliary means: none

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from events related to this course:

V Tires and Wheel Development for Passenger Cars

2114845, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

1. The role of the tires and wheels in a vehicle
2. Geometrie of Wheel and tire, Package, load capacity and endurance, Book of requirement
3. Mobility strategy, Minispare, runflat systems and repair kit.
4. Project management: Costs, weight, planning, documentation
5. Tire testing and tire properties
6. Wheel technology incuding Design and manifacturing methods, Wheeltesting
7. Tire presssure: Indirect and direct measuring systems
8. Tire testing subjective and objective

Learning Objectives:

The students are informed about the interactions of tires, wheels and chassis. They have an overview of the processes regarding the tire and wheel development. They have knowledge of the physical relationships.

Organizational issues
Voraussichtliche Termine, nähere Informationen und eventuelle Terminänderungen:

siehe Institutshomepage.

Literature
Manuskript zur Vorlesung

Manuscript to the lecture

T 3.572 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-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Irregular	1

Assessment
The assessment consists of a written exam (following §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendations
Basic knowledge of Experimental Economics is assumed. Therefore, it is strongly recommended to attend the course Experimental Economics beforehand.

Additional Information
The course is offered in summer 2020 for the next time, not in summer 2018.

T 3.573 Course: Topics in Stochastic Optimization [T-WIWI-112109]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104899 - Operations Research

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	Each winter term	1

Assessment
Students will be given problem sets on which they work in groups. The problem sets will involve the implementation of the models presented in the course, and exploring features of these models. The groups will present their findings in front of the class. The grading will be based on the presentation.

Recommendations
A solid understanding of Stochastic Optimization and/or Optimization under Uncertainty as well as optimization in general is highly recommended, since we will heavily build upon basics of these areas.

Additional Information
Teaching and learning format: Lecture and exercise

Workload
135 hours

T 3.574 Course: Trademark and Unfair Competition Law [T-INFO-101313]

Responsible: Dr. Yvonne Matz
Organisation: KIT Department of Informatics
Part of: M-WIWI-104903 - Law

Type	Credits	Grading	Recurrence	Version
Written examination	3 CP	graded	Each term	1

Events					
WT 24/25	2424136	Trademark and Unfair Competition Law	2 SWS	Lecture / 🗣	Matz
ST 2025	24609	Trademark and Unfair Competition Law	2 SWS	Lecture / 🗣	Matz
Exams					
WT 24/25	7500061	Trademark and Unfair Competition Law			Matz
ST 2025	7500051	Trademark and Unfair Competition Law			Matz

Legend: 💻 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 60 minutes.

Prerequisites
None.

T 3.575 Course: Traffic Engineering [T-BGU-101798]

Responsible: Prof. Dr.-Ing. Peter Vortisch
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each term	1 terms	1

Events					
WT 24/25	6232703	Road Traffic Engineering	2 SWS	Lecture / Practice (/ 🗣	Vortisch, Mitarbeiter/innen
Exams					
WT 24/25	8240101798	Traffic Engineering			Vortisch
ST 2025	8240101798	Traffic Engineering			Vortisch

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

Below you will find excerpts from events related to this course:

V Road Traffic Engineering

6232703, WS 24/25, 2 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
The lecture teaches basic principles and skills necessary to understand the methods and tools of traffic engineering, including theoretical background information as well as application of the relevant manuals and guidelines.

- Applications of traffic engineering: design of infrastructure and traffic control
- Description and analysis of traffic flow: Basic principles (kinematics, measurements of traffic flows, microscopic and macroscopic traffic parameters, Fundamental diagram)
- Methods in traffic engineering: travel demand structure, traffic flow characteristics, Queuing theory, Level-of-Service-concepts
- Capacity analysis for intersections with and without signalisation (entries and weaving sections, roundabouts and signal-controlled intersection),
- Backgrounds and application of the German Highway Capacity Manual
- Design of signal control (Fixed time signal controls, vehicle actuated control, „green waves“, network control, progressive signal systems) including public transport (prioritizing systems) and other transport modes (bicycles, pedestrians)
- Introduction to traffic management (for more detailed information see lecture “Transport Management and Transport Telematics [6232802])

Coordination: Baumann, Marvin

T 3.576 Course: Traffic Flow Simulation [T-BGU-101800]

Responsible: Prof. Dr.-Ing. Peter Vortisch
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each term	1 terms	1

Events					
ST 2025	6232804	Traffic Simulation	2 SWS	Lecture / Practice (/ 🗣	Vortisch, Mitarbeiter/innen
Exams					
WT 24/25	8240101800	Traffic Flow Simulation			Vortisch
ST 2025	8240101800	Traffic Flow Simulation			Vortisch

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

Below you will find excerpts from events related to this course:

V Traffic Simulation

6232804, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
The lecture teaches basic principles and application of traffic flow simulation tools in traffic engineering and transport planning.

This includes application of simulation software as well as the knowledge about models and how to deal with the stochastic nature of simulation results.

The lecture teaches the application of microscopic traffic flow simulation using the simulation software PTV Vissim, combining practical and theoretical aspects. Theoretical aspects include car following models, lane changing behavior and route choice models. Calibration and validation of the models will be explained and demonstrated by practical examples. Furthermore, German and American guidelines for the application of simulation models will be discussed and background information will be given.

In addition to the lectures, students will build a microscopic traffic flow model of an intersection. The aim is to practically apply what has been learned and to deepen the modeling knowledge.

Coordination: Grau, Josephine

T 3.577 Course: Traffic Management and Transport Telematics [T-BGU-101799]

Responsible: Prof. Dr.-Ing. Peter Vortisch
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each term	1 terms	2

Events					
ST 2025	6232802	Traffic Management and Telematics	2 SWS	Lecture / Practice (/ 🗣	Vortisch
Exams					
WT 24/25	8240101799	Traffic Management and Transport Telematics			Vortisch
ST 2025	8240101799	Traffic Management and Transport Telematics			Vortisch

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
oral Exam, appr. 20. min.

Prerequisites
Exercise Transportation Data Analysis must be passed

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-BGU-113971 - Exercise Transportation Data Analysis must have been passed.

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.578 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-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each summer term	1

Events					
ST 2025	2560230	Transport Economics	2 SWS	Lecture	Mitusch, Szimba
ST 2025	2560231	Übung zu Transportökonomie	1 SWS	Practice	Krenn
Exams					
WT 24/25	7900232	Transport Economics			Mitusch
ST 2025	7900275	Transport Economics			Mitusch

Assessment
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 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)

Content
The course shall provide an overview of transport economics. It will be demonstrated, using new microeconomic models, which impacts regulation and pricing in transport have on the economic actions of individuals and logisticans and which benefits and costs apply. The following topics will be discussed:

- demand and supply in transport
- empirical analysis of transport demand
- assessment of transport infrastructure projects
- external effects in transport
- transport policy
- cost structures of transport infrastructure
- Project evaluation from the perspective of the public sector

Literature
Literatur:

Aberle, G: Transportwirtschaft: einzelwirtschaftliche und gesamtwirtschaftliche Grundlagen München; Wien: Oldenbourg, 2003.

Blauwens, G., De Baere, P. and Van der Voorde, E. (2006): Transport Economics.

Frerich, J; Müller, G: Europäische Verkehrspolitik, Landverkehrspolitik München; Wien: Oldenbourg, 2004.

Dasgupta, A, Pearce, D (1972): Cost-Benefit Analysis, MacMillan, London.

Europäische Kommission (2008): Guide to Cost Benefit Analysis of Investment Projects, online unter http://ec.europa.eu/regional_policy/sources/Ben-Akiva, M., Meerseman, H., and Van de Voorde, E. (2008): Recent developments in transport modelling: Lessons for the freight sector.

Ortúzar, J. d. D. and Willumsen, L. (1990): Modelling Transport.

T 3.579 Course: Transportation Data Analysis [T-BGU-100010]

Responsible: PD Dr.-Ing. Martin Kagerbauer
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each term	1 terms	2

Events					
WT 24/25	6232901	Empirical Data in Transportation	2 SWS	Lecture / Practice (/	Kagerbauer
Exams					
WT 24/25	8245100010	Transportation Data Analysis			Kagerbauer
ST 2025	8240100010	Transportation Data Analysis			Kagerbauer

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Prerequisites
The Exercise Transportation Data Analysis (T-BGU-113671) has to be passed.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-BGU-113671 - Exercise Transportation Data Analysis must have been passed.

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.580 Course: Transportation Systems [T-BGU-106610]

Responsible: Prof. Dr.-Ing. Peter Vortisch
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Written examination	3 CP	graded	Each term	1 terms	2

Events					
ST 2025	6200406	Transportation Systems	2 SWS	Lecture / 🗣	Vortisch
Exams					
WT 24/25	8230106610	Transportation Systems			Vortisch
ST 2025	8230106610	Transportation Systems			Vortisch

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.581 Course: Trustworthy Emerging Technologies [T-WIWI-113026]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Examination of another type	4,5 CP	graded	see Annotations	1

Assessment
The examination will no longer be offered from summer semester 2025.

Additional Information
The course is no longer offered.

Workload
135 hours

T 3.582 Course: Tunnel Construction and Blasting Engineering [T-BGU-101846]

Responsible: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Expansion	Version
Oral examination	3 CP	graded	Each term	1 terms	1

Events					
WT 24/25	6241903	Tunnel Construction and Blasting Engineering	2 SWS	Lecture / 🗣	Haghsheno, Scheuble
Exams					
WT 24/25	8240101846	Tunnel Construction and Blasting Engineering			Haghsheno, Schneider

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
90 hours

T 3.583 Course: Tutoring: Training and Practice [T-WIWI-112967]

Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104910 - Interdisciplinary Qualifications

Type	Credits	Grading	Recurrence	Version
Coursework	2 CP	pass/fail	Each term	1

Assessment

- Successful participation in the KIT-PEBA tutor training course "Start in die Lehre": 2 credit points.
- Successful participation in the tutor training course "Start in die Lehre" and supplementary tutoring activity over at least two semesters: 3 credit points.

Additional Information
The successful participation in the tutor training "Start in die Lehre" of KIT-PEBA can be credited in the seminar module WiIng/ TVWL M.Sc. as interdisciplinary qualification with two or three credit points.

The online application with further information can be found at https://portal.wiwi.kit.edu/forms/form/AnerkennungTutorent%C3%A4tigkeit.

T 3.584 Course: Ubiquitous Computing [T-INFO-101326]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Oral examination	5 CP	graded	Each winter term	1

Events					
WT 24/25	2424146	Ubiquitäre Informationstechnologien		Lecture / Practice (	Beigl, Röddiger
Exams					
WT 24/25	7500389_03.02.2025	Ubiquitous Computing			Beigl
WT 24/25	7500395.17.03.2025	Ubiquitous Computing			Beigl
ST 2025	7500367_14.07.2025	Ubiquitous Computing			Beigl
ST 2025	7500395.07.04.2025	Ubiquitous Computing			Beigl

Assessment
The assessment is carried out as an oral examination (§ 4 Abs. 2 Nr. 2 SPO) lasting 20 minutes.

Prerequisites
None.

T 3.585 Course: Valuation [T-WIWI-102621]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Each winter term	1

Events					
WT 24/25	2530212	Valuation	2 SWS	Lecture / 🗣	Ruckes
WT 24/25	2530213	Übungen zu Valuation	1 SWS	Practice / 🗣	Ruckes, Luedecke
Exams					
WT 24/25	7900057	Valuation			Ruckes
ST 2025	7900072	Valuation			Ruckes

Legend: 💻 Online, 🌸 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
See German version.

Prerequisites
None

Recommendations
None

Below you will find excerpts from events related to this course:

V Valuation

2530212, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Literature
Weiterführende Literatur

Titman/Martin (2013): *Valuation - The Art and Science of Corporate Investment Decisions*, 2nd. ed. Pearson International.

T 3.586 Course: Virtual Engineering I [T-MACH-102123]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each winter term	3

Events					
WT 24/25	2121352	Virtual Engineering I	2 SWS	Lecture / 🗣	Ovtcharova, weitere Mitarbeitende
WT 24/25	2121353	Exercises Virtual Engineering I	2 SWS	Practice / 🗣	Ovtcharova, Mitarbeiter, Mitarbeiter/innen
Exams					
WT 24/25	76-T-MACH-102123	Virtual Engineering I			Ovtcharova, Meyer, Rönnau
ST 2025	76-T-MACH-102123	Virtual Engineering I			Ovtcharova, Rönnau, Meyer

Legend: 🖥 Online, 🖥🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Writen examination 90 min.

Prerequisites
None

Workload
120 hours

Below you will find excerpts from events related to this course:

V Virtual Engineering I

2121352, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The course includes:

- Conception of the product (system approaches, requirements, definitions, structure)
- Generation of domain-specific product data (CAD, ECAD, software, ...) and AI methods
- Validation of product properties and production processes through simulation
- Digital twin for optimization of products and processes using AI methods

After successful attendance of the course, students can:

- conceptualize complex systems with the methods of virtual engineering and continue the product development in different domains
- model the digital product with regard to planning, design, manufacturing, assembly and maintenance.
- use validation systems to validate product and production in an exemplary manner.
- Describe AI methods along the product creation process.

Literature
Vorlesungsfolien / Lecture slides

V Exercises Virtual Engineering I

2121353, WS 24/25, 2 SWS, Language: English, Open in study portal

Practice (Ü)
On-Site

Content
The theoretical Konzepts and contents of the lecture will be trained within practical relevance by basic functionalities of VE System solutions.

Organizational issues
Practice dates will probably be offered on different afternoons (14:00 - 17:15) in two-week intervals at IMI / Übungstermine werden voraussichtlich an unterschiedlichen Nachmittagen (14:00 - 17:15) in zweiwöchigem Rhythmus am IMI angeboten.

Literature
Exercise script / Übungsskript

T 3.587 Course: Virtual Engineering II [T-MACH-102124]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	3

Events					
ST 2025	2122378	Virtual Engineering II	2 SWS	Lecture / Practice (/ 🗣	Häfner, Ovtcharova
Exams					
WT 24/25	76-T-MACH-102124	Virtual Engineering II			Ovtcharova, Häfner
ST 2025	76-T-MACH-102124	Virtual Engineering II			Ovtcharova, Häfner
ST 2025	76-T-MACH-102124-mdl	Virtual Engineering II			Häfner, Ovtcharova

Legend: 📱 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Writen examination 90 min.

Prerequisites
None

Workload
120 hours

Below you will find excerpts from events related to this course:

V Virtual Engineering II

2122378, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
The course includes:

- Fundamentals (Computer Graphics, VR, AR, MR)
- Hardware and Software Solutions
- Virtual Twin, Validation and application

After successful attendance of the course, students can:

- describe Virtual Reality concepts, as well as explaining and comparing the underlying technologies
- discuss the modeling and computer-internal picture of a VR scene and explain the operation of the pipeline to visualize the scene
- designate different systems to interact with a VR scene and assess the pros and cons of manipulation and tracking devices
- differentiate between static, dynamic and functional Virtual Twins
- describe applications and validation studies with Virtual Twins in the area of building and production

Organizational issues
Zusätzliche Übungszeiten (1 SWS) werden zu Vorlesungsbegin bekannt gegeben / Additional practice times (1 SWS) will be announced at the beginning of the lecture.

Literature
Vorlesungsfolien / Lecture slides

T 3.588 Course: Virtual Engineering Lab [T-MACH-106740]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	4 CP	graded	Each term	1

Events					
WT 24/25	2123350	Virtual Engineering Lab	3 SWS	Project (P / 🗣	Ovtcharova, Häfner
ST 2025	2123350	Virtual Engineering Lab	3 SWS	Project (P / 🗣	Häfner, Ovtcharova
Exams					
WT 24/25	76-T-MACH-106740	Virtual Engineering Lab			Ovtcharova, Häfner
ST 2025	76-T-MACH-106740	Virtual Engineering Lab			Ovtcharova, Häfner

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Assessment of another type (graded), Group project to create a VR application (project task, implementation and presentation of the project work)

Below you will find excerpts from events related to this course:

V Virtual Engineering Lab

2123350, WS 24/25, 3 SWS, Language: German/English, Open in study portal

Project (PRO)
On-Site

Content

- Introduction in Virtual Reality (hardware, software, applications)
- Exercises in the task specific software systems
- Autonomous project work in the area of Virtual Reality in small groups

Literature
Keine / None

V Virtual Engineering Lab

2123350, SS 2025, 3 SWS, Language: German/English, Open in study portal

Project (PRO)
On-Site

Content

- Introduction in Virtual Reality (hardware, software, applications)
- Exercises in the task specific software systems
- Autonomous project work in the area of Virtual Reality in small groups

Organizational issues
Siehe Webseite zur Lehrveranstaltung / see web page of the lecture

Literature
Keine / None

T 3.589 Course: Virtual Reality Practical Course [T-MACH-102149]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	4 CP	graded	Each term	3

Events					
WT 24/25	2123375	Virtual Reality Practical Course	3 SWS	Project (P / 🗣	Ovtcharova, Häfner
Exams					
WT 24/25	76-T-MACH-102149	Virtual Reality Practical Course			Ovtcharova, Häfner
ST 2025	76-T-MACH-102149	Virtual Reality Practical Course			Ovtcharova, Häfner

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Learning control is an examination of another type. The overall impression is evaluated. The following aspects are included in the grading:

- Project work and documentation
- Presentation and demonstration of the project results

The grading scale will be announced in the course.

Prerequisites
None

Additional Information
Number of participants is limited

Workload
120 hours

Below you will find excerpts from events related to this course:

V Virtual Reality Practical Course

2123375, WS 24/25, 3 SWS, Language: German/English, Open in study portal

Project (PRO)
On-Site

Content

- Introduction in Virtual Reality (hardware, software, applications)
- Exercises in the task specific software systems
- Autonomous project work in the area of Virtual Reality in small groups

Literature
Keine / None

T 3.590 Course: Virtual Training Factory 4.X [T-MACH-106741]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	4 CP	graded	Each term	2

Assessment
Assessment of another type (graded), Group project (project work, final presentation) for the modeling of production plants in VR

Prerequisites
none

T 3.591 Course: Visual Computing [T-WIWI-110108]

Responsible: Dr. Tatiana Landesberger von Antburg
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104901 - Informatics (KIT-Department of Economics and Management)

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	Once	2

Assessment
The examination is offered for first writers only in the summer semester 2019. The repeat exam will take place in the winter semester 2019/2020 (only for "repeaters").

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.

Prerequisites
None.

Additional Information
The lecture will be offered once in the summer semester 2019.

Workload
150 hours

T 3.592 Course: Warehousing and Distribution Systems [T-MACH-105174]

Responsible: Prof. Dr.-Ing. Kai Furmans
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each summer term	3

Events					
ST 2025	2118097	Warehousing and distribution systems	2 SWS	Lecture / 🗣	Furmans
Exams					
ST 2025	76-T-MACH-105174	Warehousing and Distribution Systems			Furmans

Legend: 🖥 Online, 🖥 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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.

Prerequisites
none

Workload
120 hours

Below you will find excerpts from events related to this course:

V Warehousing and distribution systems

2118097, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Organizational issues
Vorlesung:

Die Vorlesung wird in diesem Semester als **Blockveranstaltung** angeboten. Die Veranstaltungstermine sind:

- Mi., 14. Mai
- Do., 15. Mai
- Fr., 16 Mai

Die Vorlesung startet jeweils um 08:00 Uhr und findet im **Selmayr-HS (Geb. 50.38)** statt. Bitte beachten Sie für mögliche kurzfristige Raumänderungen die Informationen im ILIAS-Kurs.

Die Vorlesung wird von einem externen Dozenten aus Logistikberatung gehalten.

Fokusthemen:

- Grundlagen von Lagerplanung und Intralogistik-Technik
- Je eine Vorlesungseinheit für alle Bereiche eines Lagers
- Praxisbeispiele und Fallstudien
- Übersicht über Logistiknetzwerke und Lean Logistics

Klausur:

- Informationen zur Klausur werden zeitnah über den Ilias-Kurs bekanntgegeben.

Vorlesungsbegleitende Unterlagen:

- Die vorlesungsbegleitenden Unterlagen finden Sie ebenfalls im Ilias-Kurs.

Ansprechpartner:

Keno Büscher

Literature

ARNOLD, Dieter, FURMANS, Kai (2005)
Materialfluss in Logistiksystemen, 5. Auflage, Berlin: Springer-Verlag

ARNOLD, Dieter (Hrsg.) et al. (2008)
Handbuch Logistik, 3. Auflage, Berlin: Springer-Verlag

BARTHOLDI III, John J., HACKMAN, Steven T. (2008)
Warehouse Science

GUDEHUS, Timm (2005)
Logistik, 3. Auflage, Berlin: Springer-Verlag

FRAZELLE, Edward (2002)
World-class warehousing and material handling, McGraw-Hill

MARTIN, Heinrich (1999)
Praxiswissen Materialflußplanung: Transport, Hanshaben, Lagern, Kommissionieren, Braunschweig, Wiesbaden: Vieweg

WISSER, Jens (2009)
Der Prozess Lagern und Kommissionieren im Rahmen des Distribution Center Reference Model (DCRM); Karlsruhe : Universitätsverlag

Eine ausführliche Übersicht wissenschaftlicher Paper findet sich bei:

ROODBERGEN, Kees Jan (2007)
Warehouse Literature

T 3.593 Course: Water Chemistry and Water Technology I [T-CIWVT-101900]

Responsible: Prof. Dr. Harald Horn
Organisation: KIT Department of Chemical and Process Engineering
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	6 CP	graded	Each winter term	1

Events					
WT 24/25	2233030	Water Technology	2 SWS	Lecture /	Horn
WT 24/25	2233031	Exercises to Water Technology	1 SWS	Practice /	Horn, und Mitarbeitende
WT 24/25	2233032	Practical Course: Water Quality and Water Assessment	2 SWS	Practical course /	Horn, Hille-Reichel, und Mitarbeitende
Exams					
WT 24/25	7232001	Water Chemistry and Water Technology I			Horn
ST 2025	7232001	Water Chemistry and Water Technology I			Horn

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Prerequisites
T-CIWVT-103351 - Wasserchemisches Praktikum must be passed.

T 3.594 Course: Web Applications and Service-Oriented Architectures (II) [T-INFO-101271]

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: M-WIWI-104909 - Informatics (Department of Informatics)

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each summer term	1

Events					
ST 2025	24677	Web Applications and Service oriented Architectures (II)	2 SWS	Lecture / 🗣	Abeck, Schneider, Throner
Exams					
ST 2025	7500138	Web Applications and Service-oriented Architectures (II)			Abeck

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

T 3.595 Course: Welding Technology [T-MACH-105170]

Responsible: Dr.-Ing. Majid Farajian
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each winter term	1

Events					
WT 24/25	2173571	Welding Technology	2 SWS	Block / 🗣	Farajian
Exams					
WT 24/25	76-T-MACH-105170	Welding Technology			Farajian

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Oral exam, about 20 minutes

Prerequisites
none

Recommendations
Basics of material science (iron- and non-iron alloys), materials, processes and production, design.

All the relevant books of the German Welding Institute (DVS: Deutscher Verband für Schweißen und verwandte Verfahren) in the field of welding and joining is recommended.

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from events related to this course:

V Welding Technology

2173571, WS 24/25, 2 SWS, Language: German, Open in study portal

Block (B)
On-Site

Content
definition, application and differentiation: welding,

welding processes, alternative connecting technologies.

history of welding technology

sources of energy for welding processes

Survey: Fusion welding,

pressure welding.

weld seam preparation/design

welding positions

weldability

gas welding, thermal cutting, manual metal-arc welding

submerged arc welding

gas-shielded metal-arc welding, friction stir welding, laser beam and electron beam welding, other fusion and pressure welding processes

static and cyclic behavior of welded joints,

fatigue life improvement techniques

learning objectives:

The students have knowledge and understanding of the most important welding processes and its industrial application.

They are able to recognize, understand and handle problems occurring during the application of different welding processes relating to design, material and production.

They know the classification and the importance of welding technology within the scope of connecting processes (advantages/ disadvantages, alternatives).

The students will understand the influence of weld quality on the performance and behavior of welded joints under static and cyclic load.

How the fatigue life of welded joints could be increased, will be part of the course.

requirements:
basics of material science (iron- and non-iron alloys), of electrical engineering, of production processes.

workload:

The workload for the lecture Welding Technology is 120 h per semester and consists of the presence during the lecture (18 h) as well as preparation and rework time at home (102 h).

exam:

oral, ca. 20 minutes, no auxiliary material

Organizational issues
Die Blockveranstaltung findet am 23.01.25, 24.01.2025, 30.01.2025, 31.10.2025 jeweils von 09:00 bis 15:00 Uhr in Gebäude 10.91 Raum 380 statt. Anmeldungen erfolgen über den Beitritt zum ILIAS-Kurs. Bei Fragen wenden Sie sich gerne an majid.farajian@kit.edu

Literature
Für ergänzende, vertiefende Studien gibt das

Handbuch der Schweißtechnik von J. Ruge, Springer Verlag Berlin, mit seinen vier Bänden

Band I: Werkstoffe

Band II: Verfahren und Fertigung

Band III: Konstruktive Gestaltung der Bauteile

Band IV: Berechnung der Verbindungen

einen umfassenden Überblick. Der Stoff der Vorlesung Schweißtechnik findet sich in den Bänden I und II. Einen kompakten Einblick in die Lichtbogenschweißverfahren bietet das Bändchen

Nies: Lichtbogenschweißtechnik, Bibliothek der Technik Band 57, Verlag moderne Industrie AG und Co., Landsberg / Lech

Im Übrigen sei auf die zahlreichen Fachbücher des DVS Verlages, Düsseldorf, zu allen Einzelgebieten der Fügetechnik verwiesen.

T 3.596 Course: Welfare Economics [T-WIWI-102610]

Responsible: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104908 - Economics

Type	Credits	Grading	Recurrence	Version
Written examination	4,5 CP	graded	see Annotations	3

Events					
ST 2025	2520517	Welfare Economics	2 SWS	Lecture / 🗣	Puppe
ST 2025	2520518	Übung zur Wohlfahrtstheorie	1 SWS	Practice / 🗣	Puppe, Ammann
Exams					
ST 2025	7900257	Welfare Economics			Puppe

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written exam (60 min.).

Prerequisites
The course *Economics I: Microeconomics* [2610012] has to be completed beforehand.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The course T-WIWI-102708 - Economics I: Microeconomics must have been passed.

Recommendations
None

Additional Information
The course only takes place every second summer semester, the next course is planned for summer semester 2025.

Below you will find excerpts from events related to this course:

V Welfare Economics

2520517, SS 2025, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture "Welfare economics" deals with the question of efficiency and distributional properties of economic allocations. The lecture covers different fairness concepts for the evaluation of economic allocations as well as the corresponding allocation mechanisms.

The first part of the lecture focuses on the efficiency and fairness of market equilibria. The two welfare theorems form the starting point of the first part: The 1st welfare theorem states that (under weak conditions) every competitive equilibrium is efficient. Conversely, according to the second welfare theorem (under stronger conditions), any efficient allocation can be obtained as a competitive equilibrium by choosing the appropriate initial endowment. Subsequently, concepts of fairness such as envy freeness, egalitarian equivalence, and others are defined and discussed in the context of general equilibrium theory.

The second part of the lecture deals with the efficiency and fairness of allocations that are the result of collective decisions. To this end, the concepts of the social welfare function and the social welfare functional are first introduced. In this part, special attention is paid to Arrow's famous impossibility theorem and the concept of axiomatic bargaining.

The third part of the lecture deals with the principle of "social justice" (i.e. distributional justice). The fundamental principles of Rawl's theory of justice, John Roemer's theory of equality of opportunity and other theories are explained and critically analyzed.

Learning objectives:
The student should learn

- to name different ideas of fairness and define them formally in mathematical terms.
- to determine efficient and fair allocations in the context of market equilibria and social welfare functionals.
- to describe, explain, and prove the interrelationships between the different ideas of fairness and efficiency in the context of market equilibria and social welfare functionals.
- to assess and discuss real economic allocations with regard to different ideas of fairness.

Workload:
Total workload for 4.5 credit points: approx. 135 hours
Attendance: 30 hours
Self-study: 105 hours

Literature

- Rawls, J. 1971. *A Theory of Justice*. Harvard University Press.
- Roemer, J. 1996. *Theories of Distributive Justice*. Harvard University Press.

T 3.597 Course: Windpower [T-MACH-105234]

Responsible: Norbert Lewald
Organisation: KIT Department of Mechanical Engineering
Institute of Thermal Turbomachinery
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Written examination	4 CP	graded	Each winter term	2

Events					
WT 24/25	2157381	Windpower	2 SWS	Lecture / 🗣	Lewald
Exams					
WT 24/25	76-T-MACH-105234	Windpower			Lewald
ST 2025	76-T-MACH-105234	Windpower			Lewald

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
written exam, 120 minutes

Prerequisites
none

Workload
120 hours

Below you will find excerpts from events related to this course:

V **Windpower** — **Lecture (V) On-Site**
2157381, WS 24/25, 2 SWS, Language: German, Open in study portal

T 3.598 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Irregular	1

Events					
WT 24/25	2577922	Workshop Business Wargaming - Analyse strategischer Interaktionen (Master)	2 SWS	Seminar / 🗣	Lindstädt
ST 2025	2577922	Workshop Business Wargaming - Analyse strategischer Interaktionen (Master)	2 SWS	Seminar / 🗣	Lindstädt
Exams					
WT 24/25	7900172	Workshop Business Wargaming – Analyzing Strategic Interactions			Lindstädt
ST 2025	7900071	Workshop Business Wargaming – Analyzing Strategic Interactions			Lindstädt

Legend: 🖥 Online, 🌍 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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

Recommendations
Basic knowledge as conveyed in the bachelor module „Strategy and Organization“ is recommended.

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V Workshop Business Wargaming - Analyse strategischer Interaktionen (Master) Seminar (S) On-Site

2577922, WS 24/25, 2 SWS, Language: German, Open in study portal

Content
This course enables the simulation of strategic conflicts in which the participants assume the roles of selected actors. With the help of specially programmed wargaming software, strategic conflicts are simulated interactively and then reflected upon and discussed.

The course focuses on the simulation and analysis of real conflict situations with strategic interaction. Students gain a better understanding of the structural characteristics of strategic conflicts in the fields of economics and politics as well as the ability to derive their own strategies for action.

Through a combination of group work, simulation, and reflection, the seminar provides a learning experience that both strengthens team skills and develops analytical skills in strategic conflict. Join this seminar to gain sound insights into conflict dynamics and develop effective action strategies for complex situations.

Learning Objectives

Upon completion of the course, students will be able to,

- learn the basic methodologies, features and benefits of business wargaming
- improve their understanding of conflict dynamics by reflecting on strategic conflicts
- Strengthen analytical skills by processing a variety of courses of action and deriving strategies for action

Recommendations:

Prior attendance of the Bachelor's module "Strategy and Organization" or another module with comparable content at another university is recommended.

Workload:

- Total workload: approx. 90 hours
- Attendance time: 15 hours
- Preparation and follow-up: 75 hours
- Examination and preparation: not applicable

Evidence:

In this course, real conflict situations are simulated and analyzed with the help of various methods from business wargaming. Details on the design of the performance review will be announced during the lecture.

Annotation:

The course is admission restricted. In case of prior admission to another course in the module "Strategy and Management: Advanced Topics" [M-WIWI-103119], participation in this course is guaranteed. For more information on the application process, see the IBU website.

Exams are offered at least every other semester, so the entire module can be completed in two semesters.

Organizational issues
IBU-Seminarraum, Geb. 05.20, Raum 2A-12.1

V **Workshop Business Wargaming - Analyse strategischer Interaktionen (Master)** **Seminar (S)**
2577922, SS 2025, 2 SWS, Language: German, Open in study portal **On-Site**

Content
This course enables the simulation of strategic conflicts in which the participants assume the roles of selected actors. With the help of specially programmed wargaming software, strategic conflicts are simulated interactively and then reflected upon and discussed.

The course focuses on the simulation and analysis of real conflict situations with strategic interaction. Students gain a better understanding of the structural characteristics of strategic conflicts in the fields of economics and politics as well as the ability to derive their own strategies for action.

Through a combination of group work, simulation, and reflection, the seminar provides a learning experience that both strengthens team skills and develops analytical skills in strategic conflict. Join this seminar to gain sound insights into conflict dynamics and develop effective action strategies for complex situations.

Learning Objectives

Upon completion of the course, students will be able to,

- learn the basic methodologies, features and benefits of business wargaming
- improve their understanding of conflict dynamics by reflecting on strategic conflicts
- Strengthen analytical skills by processing a variety of courses of action and deriving strategies for action

Recommendations:

Prior attendance of the Bachelor's module "Strategy and Organization" or another module with comparable content at another university is recommended.

Workload:

- Total workload: approx. 90 hours
- Attendance time: 15 hours
- Preparation and follow-up: 75 hours
- Examination and preparation: not applicable

Competence Certificate:

In this course, real conflict situations are simulated and analyzed with the help of various methods from business wargaming. Details on the design of the performance review will be announced during the lecture.

Note:

The course is admission restricted. In case of prior admission to another course in the module "Strategy and Management: Advanced Topics" [M-WIWI-103119], participation in this course is guaranteed. For more information on the application process, see the IBU website.

Exams are offered at least every other semester, so the entire module can be completed in two semesters.

Organizational issues
IBU-Seminarraum, Geb. 05.20, Raum 2A-12.1

T 3.599 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-104900 - Business Administration

Type	Credits	Grading	Recurrence	Version
Examination of another type	3 CP	graded	Irregular	1

Events					
ST 2025	2577923	Workshop aktuelle Themen Strategie und Management (Master)	2 SWS	Seminar / 🗣	Lindstädt
Exams					
ST 2025	7900122	Workshop Current Topics in Strategy and Management			Lindstädt

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
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

Recommendations
Basic knowledge as conveyed in the bachelor module „Strategy and Organization“ is recommended.

Additional Information
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.

Workload
90 hours

Below you will find excerpts from events related to this course:

V Workshop aktuelle Themen Strategie und Management (Master)

2577923, SS 2025, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content
Aspects of strategic management can be found in a variety of daily events. In this course, current strategic and industrial policy issues are discussed and the exchange of ideas on current management topics is promoted.

For this purpose, practice-relevant case studies and dedicated questions are communicated to the students in advance so that they can prepare themselves individually for the discussion. The chair team actively moderates the discussion and creates typical discussion situations such as pro/con discussions and conflicting interests of different groups in order to bring opposing opinions into an exchange and to promote the power of argumentation. In this way, the discussion not only imparts knowledge about the content, but also strengthens the participants' skills by simulating real discussion situations in a management team.

In addition, company representatives and managers participate in individual case studies to strengthen the context of the content and experience the daily dynamics of discussion in strategic business areas.

Learning Objectives:

Students will

- are able to evaluate strategic decisions using appropriate models of strategic business management,
- are able to present and critically evaluate theoretical approaches and models in the field of strategic business management and illustrate them using practical examples, and
- have the ability to present their position convincingly through a reasoned argumentation in structured discussions.

Recommendations:

Previous attendance of the Bachelor's module "Strategy and Organization" or another module with comparable content at another university is recommended.

Workload:

Total effort approx. 90 hours

Attendance time: 15 hours

Preparation and follow-up: 75 hours

Examination and preparation: not applicable

Competence Certificate:

Performance will be assessed through active discussion participation in the discussion rounds; here, adequate preparation will be expressed and a clear understanding of the topic and framework will be evident. Further details on the design of the performance assessment will be announced during the lecture.

Note:

This course is admission restricted. In case of prior admission to another course in the module "Strategy and Management: Advanced Topics"[M-WIWI-103119], participation in this course is guaranteed. For more information on the application process, see the IBU website.

Exams are offered at least every other semester so that the entire module can be completed in two semesters.

T 3.600 Course: Workshop Mechatronical Systems and Products [T-MACH-112648]

Responsible: Prof. Dr.-Ing. Sören Hohmann
Prof. Dr.-Ing. Sven Matthiesen
Organisation: KIT Department of Mechanical Engineering
Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Examination of another type	5 CP	graded	Each winter term	1

Events					
WT 24/25	2145162	Workshop Mechatronical Systems and Products	3 SWS	Practical course / 🗣	Matthiesen, Hohmann, Teltschik

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
None

Additional Information
The course is offered in German.

Workload
150 hours

T 3.601 Course: X-ray Optics [T-MACH-109122]

Responsible: Dr. Arndt Last
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-104907 - Engineering Sciences

Type	Credits	Grading	Recurrence	Version
Oral examination	4 CP	graded	Each term	1

Events					
WT 24/25	2141007	X-ray Optics	2 SWS	Lecture / 🗣	Last
ST 2025	2141007	X-ray optics	2 SWS	Lecture / 🗣	Last
Exams					
WT 24/25	76-T-MACH-109122	X-ray Optics			Last
ST 2025	76-T-MACH-109122	X-ray Optics			Last

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
oral exam (about 20 min)

Prerequisites
none

Workload
120 hours

Below you will find excerpts from events related to this course:

V X-ray Optics

2141007, WS 24/25, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Organizational issues
Termin und Ort nach Absprache mit den Angemeldeten

Literature
M. Born und E. Wolf
Principles of Optics, 7th (expanded) edition
Cambridge University Press, 2010

A. Erko, M. Idir, T. Krist und A. G. Michette
Modern Developments in X-Ray and Neutron Optics
Springer Series in Optical Sciences, Vol. 137
Springer-Verlag Berlin Heidelberg, 2008

D. Attwood
Soft X-Rays and Extreme Ultraviolet Radiation: Principles and Applications
Cambridge University Press, 1999

V X-ray optics

2141007, SS 2025, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
see Institute homepage

If you are interested, please contact arndt.last@kit.edu by 30.5.2023 to make an appointment.

Organizational issues
Viertägiger Blockkurs im Juni oder Juli 2024. Interessenten melden sich bitte zur Terminabsprache bis zum 30.5.2024 bei arndt.last@kit.edu