Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Module Catalogue

for the Subject

Information Systems

as a Master's with 1 major

with the degree "Master of Science"

(120 ECTS credits)

Examination regulations version: 2024
Responsible: Faculty of Management and Economics

Contents

The subject is divided into

Learning Outcomes

German contents and learning outcome available but not translated yet.
Der Master-Studiengang Information Systems wird von der Wirtschaftswissenschaftlichen Fakultät der JMU als forschungsorientierter Studiengang mit dem Abschluss „Master of Science" (M. Sc.) im Rahmen eines konsekutiven Bachelor- und Master- Modells angeboten. Der Grad des Master of Science stellt einen weiteren forschungsorientierten und berufsqualifizierenden Abschluss dar; die im Rahmen des Masterstudiums erworbene Qualifikation entspricht der eines Diplom-Wirtschaftsinformatikers bzw. einer Diplom-Wirtschaftsinformatikerin.
Im Masterstudiengang Information Systems erwerben die Studierenden vertiefte Kenntnisse und Fähigkeiten im Bereich der Wirtschaftsinformatik und erlangen so eine hohe wissenschaftliche und anwendungsbezogene Qualifikation und Selbstständigkeit auf diesem Gebiet. Die Studierenden lernen Aufgabenstellungen und Systeme der Wirtschaftsinformatik zu analysieren, Defizite zu identifizieren und unter Einsatz etablierter sowie neuer Methoden und Techniken systematisch eine konzeptionell neue bzw. verbesserte Lösung zu erarbeiten. Durch die Master-Prüfung weist der Kandidat bzw. die Kandidatin nach, dass er bzw. sie fundierte Fachkenntnisse erworben hat und Aufgaben dieser Themenbereiche selbständig bearbeiten kann.
Die Masterprüfung führt zu einem zweiten berufsqualifizierenden Abschluss, welcher auf einem Bachelorstudiengang im Bereich Wirtschaftsinformatik bzw. auf einem wirtschaftswissenschaftlichen Bachelorstudiengang mit einer Schwerpunktsetzung im Bereich Wirtschaftsinformatik aufbaut. Durch die Masterprüfung wird festgestellt, ob die Studierenden die Zusammenhänge im Bereich Wirtschaftsinformatik so beherrschen, dass sie einen eigenen Forschungsbeitrag darin leisten können.
Durch die Ausbildung und Schulung des analytischen Denkens erwerben die Studierenden die Fähigkeit, sich später in die an sie herangetragenen Aufgabengebiete einzuarbeiten und insbesondere das bereits aus dem Bachelorstudium erworbene Grundwissen in einem Masterstudiengang selbständig anzuwenden sowie auf neue Aufgabenstellungen zu übertragen. Die Absolventinnen und Absolventen sind in der Lage, Informationen im ökonomischen Kontext differenziert zu betrachten und sie mit geeigneten Modellen und Methoden zu analysieren und zu bewerten. Unter Berücksichtigung ethischer und ökologischer Fragestellungen können sie Potenziale und Risiken abschätzen sowie nachhaltige Verbesserungen oder Lösungen entwickeln. Ihre Urteile sind wissenschaftlich fundiert und beziehen die Abschätzung ökologischer und gesellschaftlicher Folgen ein. Die Absolventinnen und Absolventen sind in der Lage, ihre Entscheidungen zu erläutern und unter Beachtung wissenschaftlicher Grundsätze zu verteidigen.
Die Absolventinnen und Absolventen können am wissenschaftlichen Diskurs mit Fachvertreterinnen und Fachvertretern teilnehmen. Sie haben die notwendigen unternehmerischen, interkulturellen und Innovationskompetenzen für verantwortungsvolle Positionen in internationalen Teams und Unternehmen erworben. Neben Tätigkeiten in der Praxis sollen die Absolventen bzw. Absolventinnen befähigt werden, in Universitäten und wissenschaftlichen Einrichtungen tätig zu werden.
Zum Erreichen der Ziele ist ein hohes Maß an Eigeninitiative der Studierenden erforderlich. Studieren bedeutet insbesondere auch ein Selbststudium und das Studieren in Arbeitsgruppen. Die wissenschaftliche Literatur ist dabei eine unentbehrliche Hilfe.
Für den Erfolg im Studium und den beruflichen Erfolg nach dem Studium sind die Beherrschung der englischen Sprache und möglichst einer weiteren Fremdsprache in Wort und Schrift sowie Kenntnisse in Rhetorik und Präsentationstechniken besonders förderlich. Die Entwicklung dieser Kenntnisse fordert die eigene Initiative der Studierenden über das Lehrangebot hinaus. Das Studium fördert die Persönlichkeitsentwicklung und Ausbildung interkultureller Kompetenzen durch entsprechende Lehrangebote (auch in englischer Sprache) sowie die Förderung von Auslandsaufenthalten durch zahlreiche Partnerprogramme und die vereinfachte Anerkennung von im Ausland erworbenen Leistungen.

Abbreviations used

Course types: **E** = field trip, **K** = colloquium, **O** = conversatorium, **P** = placement/lab course, **R** = project, **S** = seminar, **T** = tutorial, **Ü** = exercise, **V** = lecture

Term: **SS** = summer semester, **WS** = winter semester

Methods of grading: **NUM** = numerical grade, **B/NB** = (not) successfully completed

Regulations: **(L)ASPO** = general academic and examination regulations (for teaching-degree programmes), **FSB** = subject-specific provisions, **SFB** = list of modules

Other: **A** = thesis, **LV** = course(s), **PL** = assessment(s), **TN** = participants, **VL** = prerequisite(s)

Conventions

Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not creditable for bonus.

Notes

Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the method of assessment to be used in the current semester by two weeks after the start of the course at the latest and will communicate this in the customary manner.

Should the module comprise more than one graded assessment, all assessments will be equally weighted, unless otherwise stated below.

Should the assessment comprise several individual assessments, successful completion of the module will require successful completion of all individual assessments.

In accordance with

the general regulations governing the degree subject described in this module catalogue:

ASPO2015

associated official publications (FSB (subject-specific provisions)/SFB (list of modules)):

20-Mar-2024 (2024-29)

This module handbook seeks to render, as accurately as possible, the data that is of statutory relevance according to the examination regulations of the degree subject. However, only the FSB (subject-specific provisions) and SFB (list of modules) in their officially published versions shall be legally binding. In the case of doubt, the provisions on, in particular, module assessments specified in the FSB/SFB shall prevail.

Compulsory Courses

(20 ECTS credits)

Module title			Abbreviation
Information Systems			12-M-IS-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Information Systems Engineering		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The course provides an overview of key strategic and operational aspects of the management of information and information systems in organizations. The focus is on (a) enterprise systems, (b) e-business, (c) business analytics and (d) enterprise AI.

Intended learning outcomes

- Understanding the value of information and information systems from a business perspective
- Be able to evaluate strategic and operational use cases for IT in the company
- Get to know methods for the management and utilization of data
- Be able to transfer the concepts taught to practical application examples

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) term paper (15 to 20 pages)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)

Module title	Abbreviation
Project Seminar	12-M-PSI-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Management and Business Information Systems	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
15	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The module "Project Seminar," in which students work in small groups on a practice-relevant problem, offers a comprehensive teaching and learning experience that covers various competency areas:

- Students deal with real-life problem situations that come directly from practice. This includes the detailed capture of current states (the present situation) and desired states (the target situation). Additionally, by creating a subject concept, theoretical and practical knowledge is applied in both a documenting and planning manner.
- The module places great emphasis on teaching and applying various project management techniques, including work planning, resource management, and time management.
- In the implementation of the developed subject concepts into an information system solution (IS solution), students practically apply their technical skills. They engage in software development, data management, and possibly aspects of artificial intelligence, depending on the project theme.
- The module also promotes interdisciplinary skills. This particularly includes teamwork, which is essential in this context.

Intended learning outcomes

The "Project Seminar" module aims to achieve the following learning outcomes:

1. Subject-specific Competencies: Students learn to identify and design the current and desired states in subject concepts. They apply this knowledge practically by implementing it in an information system solution (IS solution). Through intensive engagement with realistic problems, students expand their basic knowledge and gain specialized expertise based on current research.
2. Methodological Competencies: Students enhance their problem-solving skills by independently tackling new and complex tasks in a project context and developing flexible solution strategies. They learn important aspects of project management, including planning, organizing, and executing projects within a team context.
3. Practical Professional Competencies: By working on realistic and practice-relevant problems, students can practically apply theoretical knowledge, thereby sharpening their professional skills. Implementing an IS solution allows students to develop technical skills in information technology and system development.
4. Interdisciplinary Competencies: Working in small project groups enhances students' abilities in communication, cooperation, and conflict resolution.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

project: preparing a conceptual design (approx. 150 hours), designing and implementing an approach to solution (approx. 300 hours) as well as presentation (approx. 20 minutes), weighted 1:2:1
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

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Workload
300 h
Teaching cycle
Teaching cycle: each semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Information Systems (2024) Master's degree (1 major) Information Systems (2025)

Compulsory Electives I: Fundamentals Computer Science

(20 ECTS credits)

Module title			Abbreviation
Information Retrieval			10-I=IR-212-m01
Module coordinator		**Module offered by**	
holder of the Chair of Computer Science XII		Institute of Computer Science	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

IR models (e. g. Boolean and vector space model, evaluation), processing of text (tokenising, text properties), data structures (e. g. inverted index), query elements (e. g. query operations, relevance feedback, query languages and paradigms, structured queries), search engine (e. g. architecture, crawling, interfaces, link analysis), methods to support IR (e. g. recommendation systems, text clustering and classification, information extraction).

Intended learning outcomes

The students possess theoretical and practical knowledge in the area of information retrieval and have acquired the technical know-how to create a search engine.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): IT,KI,HCI,GE

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Information Systems (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Module title	Abbreviation
Security of Software Systems	10-I=SSS-232-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science II	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The lecture provides an overview of common software vulnerabilities, state-of-the-art attack techniques on modern computer systems, as well as the measures implemented to protect against these attacks. In the course, the following topics are discussed:

- x86-64 instruction set architecture and assembly language
- Runtime attacks (code injection, code reuse, defenses)
- Web security
- Blockchains and smart contracts
- Side-channel attacks
- Hardware security

Intended learning outcomes

Students gain a deep understanding of software security, from hardware and low-level attacks to modern concepts such as blockchains. The lecture prepares for research in the area of security and privacy, while the exercises allow students to gain hands-on experience with attacks and analysis of systems from an attacker's perspective.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE,KI,LR, HCI, ES, SEC,IN

Workload

150 h

Teaching cycle

Teaching cycle: every year, summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 22 II Nr. 3 b)

Module appears in

Module studies (Master) Computer Science (2019)

Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Artificial Intelligence & Extended Reality (2024)
Master's degree (1 major) Artificial Intelligence (2024)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Information Systems (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Computer Science (2025)
Master's degree (1 major) Aerospace Computer Science (2025)
First state examination for the teaching degree Gymnasium Computer Science (2025)

Module title			Abbreviation
Software Architecture			10-I=SAR-161-m01
Module coordinator		**Module offered by**	
holder of the Chair of Computer Science II		Institute of Computer Science	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Introduction to software architecture, architectural styles and patterns, software metrics, evaluation of architectural styles, software components, interface models and design guidelines, design-by-contract, component-based software engineering, service-oriented architectures, microservice architectures, scalability of databases, cloud-native and serverless computing, continuous integration, continuous delivery, continuous deployment, model-driven architecture

Intended learning outcomes

The students possess a fundamental and applicable knowledge about advanced topics in software engineering with a focus on modern software architectures and fundamental approaches to model-driven software engineering.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes).
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE,IT,ES

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 22 II Nr. 3 b)

Module appears in

Master's degree (1 major) Computer Science (2016)
Master's degree (1 major) Mathematics (2016)
Master's degree (1 major) Computational Mathematics (2016)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)
Master's degree (1 major) Computer Science (2017)
Master's degree (1 major) Computer Science (2018)

Module studies (Master) Computer Science (2019)
Master's degree (1 major) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (2019)
Master's degree (1 major) Information Systems (2019)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)
Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Computer Science (2025)
Master's degree (1 major) Economathematics (2025)
First state examination for the teaching degree Gymnasium Computer Science (2025)

Module title			Abbreviation
Artificial Intelligence 1			10-I=KI1-212-m01
Module coordinator		**Module offered by**	
holder of the Chair of Computer Science VI		Institute of Computer Science	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Intelligent agents, uninformed and heuristic search, constraint problem solving, search with partial information, propositional and predicate logic and inference, knowledge representation.

Intended learning outcomes

The students possess theoretical and practical knowledge about artificial intelligence in the area of agents, search and logic and are able to assess possible applications.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): AT,SE,KI,HCI

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Aerospace Computer Science (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Aerospace Computer Science (2023)
Master's degree (1 major) Quantum Engineering (2024)
Master's degree (1 major) Physics International (2024)
Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Information Systems (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Computer Science (2025)

Module title			Abbreviation
Discrete Event Simulation			10-I=ST-232-m01
Module coordinator		**Module offered by**	
holder of the Chair of Computer Science III		Institute of Computer Science	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The simulation of communication systems is illustrated and practically performed on contemporary examples, e.g., popular Internet services or the Internet of Things (IoT). The following topics will be conveyed:
Introduction to simulation techniques, discrete-event simulation and process-oriented simulation, generating random numbers and random variables, statistical analysis of simulation results, evaluation of measured data, designing and evaluating simulation experiments, special random processes, possibilities and limitations of modelling and simulation, advanced concepts and techniques, practical execution of simulation projects.

Intended learning outcomes

The students possess the methodic knowledge and the practical skills necessary for the stochastic simulation of (technical) systems, the evaluation of results and the correct assessment of the possibilities and limits of simulation methods.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): IT,KI,ES,GE,IN

Workload

150 h

Teaching cycle

Teaching cycle: every year, summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 22 II Nr. 3 b)

Module appears in

Module studies (Master) Computer Science (2019)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Aerospace Computer Science (2023)
Master's degree (1 major) Artificial Intelligence & Extended Reality (2024)
Master's degree (1 major) Artificial Intelligence (2024)
Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Information Systems (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Computer Science (2025)
Master's degree (1 major) Aerospace Computer Science (2025)
First state examination for the teaching degree Gymnasium Computer Science (2025)

Module title			Abbreviation
Advanced Programming			10-I=APR-212-m01
Module coordinator		**Module offered by**	
holder of the Chair of Computer Science II		Institute of Computer Science	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

With the knowledge of basic programming, taught in introductory lectures, it is possible to realize simpler programs. If more complex problems are to be tackled, suboptimal results like long, incomprehensible functions and code duplicates occur. In this lecture, further knowledge is to be conveyed on how to give programs and code a sensible structure. Also, further topics in the areas of software security and parallel programming are discussed.

Intended learning outcomes

Students learn advanced programming paradigms. Different patterns are then implemented in multiple languages and their efficiency measured using standard metrics. In addition, parallel processing concepts are introduced culminating in the use of GPU architectures for extremely quick processing.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE,KI,LR, HCI, ES,GE,SEC

Workload

150 h

Teaching cycle

Teaching cycle: every year, winter semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) eXtended Artificial Intelligence (xtAI) (2020)
Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Aerospace Computer Science (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Computer Science (2023)

Master's degree (1 major) Aerospace Computer Science (2023)
Master's degree (1 major) Artificial Intelligence & Extended Reality (2024)
Master's degree (1 major) Artificial Intelligence (2024)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Information Systems (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Module title	Abbreviation
Machine Learning for Natural Language Processing	10-I=NLP-212-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science X	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The lecture conveys advanced knowledge about methods in computational text processing. To this end, it presents state of the art models and techniques in the area of machine learning, as well as their technical background, and their respective applications in Natural Language Processing. As one important building block of almost all modern NLP-models, different techniques for learning representations of words, so called Word Embeddings, are presented. Starting from this we cover, among others, models from the area of Deep Learning, like CNNs, RNNs and Sequence-to-Sequence architectures. The theoretical foundations of these models, like their training with Backpropagation, are also covered in depth. For all models presented in the lecture, we show their application to problems like sentiment analysis, text generation and machine translation in practice.

Intended learning outcomes

The participants have solid knowledge on problems and methods in the area of computational text processing and are able to identify and apply suitable methods for a specific task.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): AT,KI,HCI

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 22 II Nr. 3 b)

Module appears in

Module studies (Master) Computer Science (2019)
Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Computer Science (2025)
Master's degree (1 major) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)
First state examination for the teaching degree Gymnasium Computer Science (2025)

Module title	Abbreviation
Artificial Intelligence 2	10-I=KI2-212-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science VI	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Planning, probabilistic closure and Bayesian networks, utility theory and decidability problems, learning from observations, knowledge while learning, neural networks and statistical learning methods, reinforcement learning, processing of natural language.

Intended learning outcomes

The students possess theoretical and practical knowledge about artificial intelligence in the area of probabilistic closure, learning and language processing and are able to assess possible applications.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): AT,SE,KI,HCI,GE

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Aerospace Computer Science (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Aerospace Computer Science (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (2024)

Master's degree (1 major) Information Systems (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Computer Science (2025)

Module title			Abbreviation
Programming with neural nets			10-I=PNN-212-m01
Module coordinator		**Module offered by**	
holder of the Chair of Computer Science VI		Institute of Computer Science	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Overview over NN, implementation of important NN-architectures like FCN, CNN and LSTMs, practical example for NN-architectures, among others in the area of image and language processing.

Intended learning outcomes

Knowledge about possible applications and limitations of NN, for important architectures (eg. FCN, CNN, LSTM) and how they are implemented in NN-tools like Tensorflow/Keras, ability to program network structures from literature, to prepare data and solve concrete tasks for NN.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE,IT,KI,HCI,GE

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Information Systems (2019)
Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Information Systems (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Module title	Abbreviation
NLP and Text Mining	10-I=STM-162-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science VI	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Foundations in the following areas: definition of NLP and text mining, properties of text, sentence boundary detection, tokenisation, collocation, N-gram models, morphology, hidden Markov models for tagging, probabilistic parsing, word sense disambiguation, term extraction methods, information extraction, sentiment analysis. The students possess theoretical and practical knowledge about typical methods and algorithms in the area of text mining and language processing mostly for English. They are able to solve problems through the methods taught. They have gained experience in the application of text mining algorithms.

Intended learning outcomes

The students possess theoretical and practical knowledge about typical methods and algorithms in the area of text mining and language processing. They are able to solve practical problems with the methods acquired in class. They have gained experience in the application of text mining algorithms.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes).
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): AT, IT, HCI.

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 22 II Nr. 3 b)

Module appears in

Master's degree (1 major) Computer Science (2016)
Master's degree (1 major) Computer Science (2017)
Master's degree (1 major) Computer Science (2018)
Master's degree (1 major) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (2019)
Master's degree (1 major) Information Systems (2019)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)
Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Information Systems (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Master's degree (1 major) Mathematical Data Science (2025)
First state examination for the teaching degree Gymnasium Computer Science (2025)

Module title	Abbreviation
Systems Benchmarking	10-I=SB-212-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science II	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Benchmarking has become a major discipline in science and technology as a driver of product quality, efficiency, and sustainability. Reliable and fair benchmarks enable educated decisions and play an important role as evaluation tools during system design, development, and maintenance. In research, benchmarks play an integral part in the evaluation and validation of new approaches and methodologies. The course introduces the foundations of benchmarking as a discipline, covering the three fundamental elements of each benchmarking approach: metrics, workloads, and measurement methodology. More specifically the following topics are covered: benchmarking basics, metrics, statistical measurements, experimental design, workloads, measurement tools, operational analysis, basic queueing models, and benchmark standardization. Furthermore, the course covers selected application areas and case studies, such as benchmarking of energy efficiency, virtualization, storage, microservices, cloud elasticity, performance isolation, resource demand estimation, and software and system security.

Intended learning outcomes

Students are able to design and build fair and reliable benchmarks, metrics, and measurement tools. Students can evaluate the quality of existing benchmarking approaches and benchmark results.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE,IT,ES,HCI,GE

Workload

150 h

Teaching cycle

Teaching cycle: every year, summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Information Systems (2019)
Master's degree (1 major) eXtended Artificial Intelligence (xtAI) (2020)
Master's degree (1 major) Computer Science (2021)

Master's degree (1 major) Aerospace Computer Science (2021)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Aerospace Computer Science (2023)
Master's degree (1 major) Artificial Intelligence & Extended Reality (2024)
Master's degree (1 major) Artificial Intelligence (2024)
Master's degree (1 major) Information Systems (2024)

Module title	Abbreviation
Computer Vision 1	10-AI=CV1-242-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science IV	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The lecture provides knowledge about current methods and algorithms in the field of computer vision. Important basics as well as the most recent approaches to image representation, image processing and image analysis are taught.
Topics include data representation, image acquisition, restoration and enhancement, features, object modeling, image and video understanding, deep learning and generative methods and applications.
Actual models and methods of machine learning as well as their technical backgrounds are presented and their respective applications in Computer Vision are shown.

Intended learning outcomes

Students have fundamental knowledge of problems and techniques in the field of computer vision and are able to independently identify and apply suitable methods for concrete problems.

- Overview of the most important concepts of image representation, image analysis, machine learning and algorithms from Computer Vision
- Gaining experience through home assignments, practical computer and programming exercises
- Providing a sound solid background knowledge for the advanced Computer Vision 2 course

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

Written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: every year, summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Artificial Intelligence & Extended Reality (2024)
Master's degree (1 major) Artificial Intelligence (2024)

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Image Processing and Computational Photography			10-I=IP-222-m01
Module coordinator		**Module offered by**	
holder of the Chair of Computer Science IV		Institute of Computer Science	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This course aims at offering a self-contained account of image processing and computational photography and its underlying concepts, including the recent use of deep learning. The topics that will be covered are:

- introduction to image processing and computational photography
- sampling and quantization
- light and color
- image acquisition
- deep learning
- generative methods
- image signal processing
- image restoration
- sensor and image quality assessment
- image compression
- applications

Intended learning outcomes

Students have fundamental knowledge of problems and techniques in the field of image processing and computational photography and are able to independently identify and apply suitable methods for concrete problems.

- Overview of the most important concepts of image formation, perception and analysis, and Computational Photography
- Gaining experience through home assignments, practical computer and programming exercises
- Providing a sound solid background knowledge for the Computer Vision courses

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: every year, winter semester

Referred to in LPO I (examination regulations for teaching-degree programmes)
§ 22 II Nr. 3 b)
Module appears in
Master's degree (1 major) Information Systems (2019)
Master's degree (1 major) eXtended Artificial Intelligence (xtAI) (2020)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Aerospace Computer Science (2023)
Master's degree (1 major) Artificial Intelligence & Extended Reality (2024)
Master's degree (1 major) Artificial Intelligence (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Computer Science (2025)
Master's degree (1 major) Mathematical Data Science (2025)
Master's degree (1 major) Aerospace Computer Science (2025)
First state examination for the teaching degree Gymnasium Computer Science (2025)

Module title	Abbreviation
Multilingual NLP	10-I=MNLP-232-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science XII	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Languages of the world: language families, typology, etymology. Linguistic universals: words, morphology, parts-of-speech, syntax. Alphabets (scripts), encoding, and language identification. Multilingual word representation spaces (aka cross-lingual word embeddings). Transformer architecture and Pretrained (multilingual) Language Models. Machine translation. Multilingual resources: unlabeled corpora, lexico-semantic networks and word translations, parallel corpora. Cross-lingual transfer: from word alignment and label projection, over MT-based transfer to zero-shot and few-shot transfer with multilingual Transformer-based language models. Advanced topics: curse of multilinguality, modularization and language adaptation, multilingual sentence encoders, contextual parameter generation, multi-source transfer, gradient manipulations.

Intended learning outcomes

Students will acquire theoretical and practical knowledge on modern multilingual natural language processing and also get an insight into cutting edge research in (multilingual) NLP. They will learn how to represent texts from different languages in shared representation spaces that enable semantic comparison and cross-lingual transfer for various NLP tasks. Upon successful completion of the course, the students will be well-equipped to solve practical NLP problems regardless of the language of the text data, and to determine the optimal strategy to obtain best performance for any concrete target language.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: every year, summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 22 II Nr. 3 b)

Module appears in

Master's degree (1 major) Information Systems (2019)

Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Artificial Intelligence (2024)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Computer Science (2025)
Master's degree (1 major) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)
First state examination for the teaching degree Gymnasium Computer Science (2025)

Module title	Abbreviation
Statistical Network Analysis	10-I=SNA-232-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science XV	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Networks matter! This holds for technical infrastructures like communication or transportation networks, for information systems and social media in the World Wide Web, but also for various social, economic and biological systems. What can we learn from data that capture the interaction topology of such complex systems? What is the role of individual nodes and how can we discover significant patterns in the structure of networks? How do these structures influence dynamical process like diffusion or the spreading of epidemics? Which are the most influential actors in a social network? And how can we analyze time series data on systems with dynamic network topologies?
Addressing those questions, the course combines a series of lectures -- which introduce fundamental concepts for the statistical modelling of complex networks -- with weekly exercises that show how we can apply them to practical network analysis tasks. Topics covered include foundations of graph theory, centrality and modularity measures, aggregate statistical characteristics of large networks, random graphs and statistical ensembles of complex networks, generating function analysis of expected graph properties, scale-free networks, stochastic dynamics in networks, spectral analysis, as well as the modelling of time-varying networks. The course material consists of annotated slides for lectures as well as a accompanying git-Repository of jupyter notebooks, which implement and validate the theoretical concepts covered in the lectures. Students can test and deepen their knowledge through weekly exercise sheets. The successful completion of the course requires to pass a final written exam.

Intended learning outcomes

The course will equip participants with statistical network analysis techniques that are needed for the data-driven modelling of complex technical, social, and biological systems. Students will understand how we can quantitatively model the topology of networked systems and how we can detect and characterize topological patterns. Participants will learn how to use analytical methods to make statements about the expected properties of very large networks that are generated based on different stochastic models. They further gain an analytical understanding of how the structure of networks shapes dynamical processes, how statistical fluctuations in degree distributions influence the robustness of systems, and how emergent network features emerge from simple random processes.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes).
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): IN

Workload
150 h
Teaching cycle
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Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Information Systems (2019) Master's degree (1 major) Information Systems (2022) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Aerospace Computer Science (2023) Master's degree (1 major) Computational Mathematics (2024) Master's degree (1 major) Management (2024) Master's degree (1 major) Mathematics (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) Economathematics (2024) Master's degree (1 major) Information Systems (2025) Master's degree (1 major) Management (2025) Master's degree (1 major) Computer Science (2025) Master's degree (1 major) Mathematical Data Science (2025) Master's degree (1 major) Economathematics (2025) Master's degree (1 major) Aerospace Computer Science (2025)

Module title	Abbreviation
Operations Research	10-I=OR-232-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science I	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Production plans, railway timetables, the assignment of radio frequencies, planning of delivery tours, or the construction of an 'optimal' university timetable: these problems – and many more – can be modeled as (mixed-) integer linear optimization problems and solved with integer programming methods.
This course teaches integer programming methods like branch-and-bound, cutting plane, and decomposition methods. Furthermore, we practice our modeling skills by studying a variety of application examples.

Intended learning outcomes

After completing the course
- The students are able to model optimization problems as mathematical program (in particular: mixed-integer linear programs).
- The students are able to apply integer programming methods and understand how and why these work.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): IN

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 22 II Nr. 3 b)

Module appears in

Master's degree (1 major) Information Systems (2019)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Mathematics (2024)

Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Computer Science (2025)
Master's degree (1 major) Economathematics (2025)
First state examination for the teaching degree Gymnasium Computer Science (2025)

Module title			Abbreviation
Machine Learning for Networks 1			10-I=MLN1-232-m01
Module coordinator		**Module offered by**	
holder of the Chair of Computer Science XV		Institute of Computer Science	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Networks matter! This holds for technical infrastructures like communication or transportation networks, for information systems and social media in the World Wide Web, but also for various social, economic and biological systems. What can we learn from data that capture the interaction topology of such complex systems? What is the role of individual nodes and how can we discover significant patterns in the structure of networks? How do these structures influence dynamical process like diffusion or the spreading of epidemics? Which are the most influential actors in a social network? And how can we analyze time series data on systems with dynamic network topologies?

Addressing those questions, the course combines a series of lectures -- which introduce fundamental concepts for the statistical modelling of complex networks -- with weekly exercises that show how we can apply them to practical network analysis tasks. Topics covered include foundations of graph theory, centrality and modularity measures, aggregate statistical characteristics of large networks, random graphs and statistical ensembles of complex networks, generating function analysis of expected graph properties, scale-free networks, stochastic dynamics in networks, spectral analysis, as well as the modelling of time-varying networks. The course material consists of annotated slides for lectures as well as a accompanying git-Repository of jupyter notebooks, which implement and validate the theoretical concepts covered in the lectures. Students can test and deepen their knowledge through weekly exercise sheets. The successful completion of the course requires to pass a final written exam.

Intended learning outcomes

The course will equip participants with statistical network analysis techniques that are needed for the data-driven modelling of complex technical, social, and biological systems. Students will understand how we can quantitatively model the topology of networked systems and how we can detect and characterize topological patterns. Participants will learn how to use analytical methods to make statements about the expected properties of very large networks that are generated based on different stochastic models. They further gain an analytical understanding of how the structure of networks shapes dynamical processes, how statistical fluctuations in degree distributions influence the robustness of systems, and how emergent network features emerge from simple random processes.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information
Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): AT,IT,SE,KI,HCI,IN
Workload
150 h
Teaching cycle
Teaching cycle: every year, summer semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
§ 22 II Nr. 3 b)
Module appears in
Master's degree (1 major) Information Systems (2019) Master's degree (1 major) Information Systems (2022) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Artificial Intelligence & Extended Reality (2024) Master's degree (1 major) Artificial Intelligence (2024) Master's degree (1 major) Computational Mathematics (2024) Master's degree (1 major) Mathematics (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) Information Systems (2025) Master's degree (1 major) Computer Science (2025) Master's degree (1 major) Mathematical Data Science (2025) Master's degree (1 major) Aerospace Computer Science (2025) First state examination for the teaching degree Gymnasium Computer Science (2025)

Module title			Abbreviation
Data Science			10-I=DM-232-m01
Module coordinator		**Module offered by**	
holder of the Chair of Computer Science X		Institute of Computer Science	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Foundations in the following areas: definition of data mining and knowledge, discovery in databases, process model, relationship to data warehouse and OLAP data preprocessing, data visualisation, unsupervised learning methods (cluster- and association methods), supervised learning (e. g. Bayes classification, KNN, decision trees, SVM), learning methods for special data types, further learning paradigms.

Intended learning outcomes

The students possess a theoretical and practical knowledge of typical methods and algorithms in the area of data mining and machine learning. They are able to solve practical knowledge discovery problems with the help of the knowledge acquired in this course and by using the KDD process. They have acquired experience in the use or implementation of data mining algorithms.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): IT, KI, HCI, GE, SEC, IN

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Information Systems (2019)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Aerospace Computer Science (2023)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)

Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Computer Science (2025)
Master's degree (1 major) Economathematics (2025)
Master's degree (1 major) Aerospace Computer Science (2025)

Compulsory Electives II: Tracks

(40 ECTS credits)

Out of the four tracks, students may select two.

Track 1: Enterprise Systems

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Business Software 1: Management and Implementation of Information Systems			12-M-GPU-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Business Management and Business Information Systems		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module offers a comprehensive insight into the world of Enterprise Resource Planning (ERP) systems. ERP systems are central building blocks in modern business management and play a crucial role in the integration of business processes, data management and decision-making. This module is divided into three sections, each of which focuses on practical applications and examples in addition to theory.

- Section 1: ERP selection process with application examples of two ERP systems: The first part of the module is dedicated to the complex process of selecting a suitable ERP system for a company. Students are familiarized with proven methods and tools that are used in the evaluation of ERP systems. Using case studies, students compare two different ERP systems and apply the selection process in a real-life environment.
- Section 2: Low-code and no-code systems with application examples: In this part, students are familiarized with low-code and no-code platforms that enable the efficient development of individual ERP applications. The focus is on dealing with a specific software solution from a leading company in this field. Students learn the basics of these platforms and create their own applications in order to experience the advantages of low-code and no-code approaches in practice.
- Section 3: Customizing ERP software using the example of SAP S/4HANA: In the final part, students learn the basics of customizing ERP software. The focus is on the world's leading ERP system SAP S/4HANA. Students are enabled to adapt SAP S/4HANA to the specific requirements of a company. Practical exercises and case studies enable students to apply customizing techniques in real-life scenarios.

In addition to the theoretical information presented in the lecture, the exercises offer the opportunity to access the ERP systems and deal with the respective software in a practical way by means of extensive case studies.

Intended learning outcomes

The "Business Software 1: Management and Implementation of Information Systems" module aims to achieve the following learning outcomes:

1. ERP Systems - Overview and Differentiation: Students gain a comprehensive understanding of various ERP systems, their architectures, and philosophies.
2. Integration of Business Processes: Participants learn how ERP systems map and optimize business operations.
3. Selection and Customizing of ERP Systems: Students develop skills to evaluate, select, and adapt ERP systems to meet business needs.
4. Implementation of Business Processes: Students gain practical experience in independently implementing business processes in ERP and low-code/no-code platforms, and learn practical ERP customizing.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) oral examination (one candidate each: approx. 10 to 15 minutes; groups of 2: approx. 20 minutes; groups of 3: approx. 30 minutes) or
c) term paper (15 to 20 pages)
Language of assessment: German and/or English

Assessment offered: once a year, winter semester
creditable for bonus

Allocation of places

50 places.
WM1:
Should the number of applications exceed the number of available places, places will be allocated as follows:
1) Master's students of Information Systems, Management and Economathematics will be given preferential consideration.
(2) The remaining places will be allocated to students of other subjects.
(3) When places are allocated in accordance with (1) and (2) and the number of applications exceeds the number of available places, places will be allocated by lot among applicants from this group.

Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: winter semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Business Software 2: Data-driven Business Process Management and Automation	12-M-ERP-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Management and Business Information Systems	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The course comprises four main parts:
- Business Process Management
- Modern Data Management
- Process Mining
- Process Automation

In addition to the lectures, students have the opportunity to engage with fundamental research papers on Business Process Management and gain practical experience by solving a case study based on real event logs.

Intended learning outcomes

The module "Business Software 2: Data-driven Business Process Management and Automation" aims to achieve the following learning outcomes:
1. Understanding of Business Process Management: Upon completion of the course, students will be able to articulate the fundamental theories and practical methodologies of Business Process Management. This includes the ability to analyze, redesign, and implement improved business processes both manually and using automated tools.
2. Application of Modern Data Management Techniques: Students will acquire competencies in modern data management practices that are essential for real-time decision-making in business contexts.
3. Conducting Process Mining: Students will develop skills in process mining, enabling them to extract data from event logs and analyze this information to uncover inefficiencies and opportunities within business processes. They will learn to apply process mining tools and techniques to real datasets, interpret results, and propose actionable improvements.
4. Implementation of Process Automation Solutions: The course equips students with the knowledge and skills to automate business processes using industry-standard automation software such as UiPath. Students will learn to identify suitable processes for automation, design automation workflows, and implement these systems to enhance operational efficiency.
5. Engagement in Scientific Research and Practical Application: Students will expand their academic and practical understanding by engaging with fundamental research papers in the field of Business Process Management. They will also gain practical experience through case studies and hands-on projects, allowing them to effectively apply theoretical knowledge to solve real-world problems.
6. Development of Professional Competencies: Throughout the course, students will develop a range of professional skills, including critical thinking, problem-solving, teamwork, and effective communication. These competencies are crucial for successful career development in Business Process Management and related fields.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) oral examination (one candidate each: approx. 10 to 15 minutes, groups of 2: approx. 20 minutes, groups of 3: approx. 30 minutes) or
c) term paper (15 to 20 pages)
Language of assessment: German and/or English

Assessment offered: Once a year, summer semester
creditable for bonus

Allocation of places

50 places.
WM1:
Should the number of applications exceed the number of available places, places will be allocated as follows:
1) Master's students of Information Systems, Management and Economathematics will be given preferential consideration.
(2) The remaining places will be allocated to students of other subjects.
(3) When places are allocated in accordance with (1) and (2) and the number of applications exceeds the number of available places, places will be allocated by lot among applicants from this group.

Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Core Electives

(10 ECTS credits)

Module title	Abbreviation
Professional Project Management	10-I=PM-212-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science III	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	We recommend completing module 10-I=PRJAK in parallel.

Contents

Project goals, project assignment, project success criteria, business plan, environment analysis and stakeholder management, initialisation, definition, planning, execution/control, finishing of projects, reporting, project communication and marketing, project organisation, team building and development, opportunity and risk management; conflict and crisis management, change and claim management; contract and procurement management, quality management, work techniques, methods and tools; leadership and social skills in project management, program management, multiproject management, project portfolio management, PMOs; peculiarities of software projects; agile project management/SCRUM, combination of classic and agile methods.

Intended learning outcomes

The students possess practically relevant knowledge about the topics of production management and/or professional project management. They are familiar with the critical success criteria and are able to initiate, define, plan, control and review projects.

Courses (type, number of weekly contact hours, language — if other than German)

V (4)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE,IT,KI,ES,LR,HCI,GE

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Management (2022)

Master's degree (1 major) Media Entertainment (2022)
Master's degree (1 major) Psychology of digital media (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Module title			Abbreviation
Project - Current Topics in Computer Science			10-I=PRJAK-212-m01
Module coordinator		**Module offered by**	
Dean of Studies Informatik (Computer Science)		Institute of Computer Science	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Completion of a project task (in Teams).

Intended learning outcomes

The project allows participants to work on a problem in computer science in teams.

Courses (type, number of weekly contact hours, language — if other than German)

P (4)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

project report (10 to 15 pages) and presentation of project (15 to 30 minutes)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered (Each project is offered one time only. The project will not be repeated; there will not be another project with the same topic. Assessment can, therefore, only be offered for the project offered in the respective semester)

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): AT, SE, IT, KI, ES, LR, HCI, GE

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Management (2022)
Master's degree (1 major) Media Entertainment (2022)
Master's degree (1 major) Psychology of digital media (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Module title			Abbreviation
Industrial Management 1			12-M-SBM-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Management and Industrial Management	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The course addresses central issues of strategic supply management. The supply function of the company (purchasing, materials management, procurement logistics) and its strategic importance is analysed and basic methods are developed that are relevant in this area. Ecological and social issues are addresses as well as economic issues.

Intended learning outcomes

Students learn the principles of performance-oriented optimization of all procurement activities, including ecological and social aspects. They learn how to develop long-term, competitively sensitive potentials for success. After completion of the module students are able to adequately structure problems in strategic procurement. They are able to accurately classify the tasks of the procurement function and to describe and discuss their strategic importance and can apply essential methods and procedures.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 40 to 60 minutes) or
b) presentation (approx. 20 minutes) and term paper (15 to 20 pages), weighted 1:1 or
c) term paper (30 to 40 pages) or
d) portfolio (approx. 50 hours)
Language of assessment: German and/or English
Assessment offered: Only when announced in the semester in which the courses are offered
creditable for bonus

Allocation of places

Number of places: 20.
WA:
Should the number of applications exceed the number of available places, places will be allocated as follows:
(1) Students who already have successfully completed courses offered by the supervising chair will be given preferential consideration.
a. Among applicants with the same number of successfully completed modules, places will be allocated according to the total number of ECTS credits achieved in the corresponding modules.
b. When places are allocated in accordance with b) and the number of applications exceeds the number of available places, places will be allocated according to the average grade of assessments taken in the corresponding courses.
c. Among applicants with the same average grade, places will be allocated by lot.
(2) Any remaining places are available to students who have not yet successfully completed any courses of the supervising chair. The selection is made according to study progress (number of semesters); among applicants with the same number of semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

Additional information

Module can be taught in form of E Learning course or as a block.

Workload
150 h
Teaching cycle
Teaching cycle: after announcement
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Management (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) International Economic Policy (2024) Master's degree (1 major) Economathematics (2024)

Module title	Abbreviation
Industrial Management 3	12-M-SPM-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Management and Industrial Management	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module will discuss contents and procedures of strategic production management and, in particular, planning and control concepts, especially Lean Production, Total Quality Management und Agile Manufacturing. Furthermore, essential issues regarding ecological aspects and their role for industrial companies are diskussed and mathematical models baased on production theory are developed.
Students will become familiar with the essentials of strategic production management. Theoretical and analytical models will be used for analysing both economic and ecological issues. In addition, the module will discuss principles of value structure optimisation and will develop competences regarding the development of integrated mathematical models.

Intended learning outcomes

After completion of the module students are able to process, to analyze and answer questions of operations strategy structured and goal-oriented in a global context using appropriate methods. Furthermore, they know the main strategic tasks and objectives in production management and evaluate and apply planning and control concepts for the production in realistic application situations.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 40 to 60 minutes) or
b) presentation (approx. 20 minutes) and term paper (15 to 20 pages), weighted 1:1 or
c) term paper (30 to 40 pages) or
d) portfolio (approx. 50 hours)
Language of assessment: German and/or English
Assessment offered: Only when announced in the semester in which the courses are offered
creditable for bonus

Allocation of places

Number of places: 20.
WA:
Should the number of applications exceed the number of available places, places will be allocated as follows:
(1) Students who already have successfully completed courses offered by the supervising chair will be given preferential consideration.
a. Among applicants with the same number of successfully completed modules, places will be allocated according to the total number of ECTS credits achieved in the corresponding modules.
b. When places are allocated in accordance with b) and the number of applications exceeds the number of available places, places will be allocated according to the average grade of assessments taken in the corresponding courses.
c. Among applicants with the same average grade, places will be allocated by lot.
(2) Any remaining places are available to students who have not yet successfully completed any courses of the supervising chair. The selection is made according to study progress (number of semesters); among applicants

with the same number of semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.
Additional information
Module can be taught in form of E Learning course or as a block.
Workload
150 h
Teaching cycle
Teaching cycle: after announcement
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Management (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) International Economic Policy (2024) Master's degree (1 major) Economathematics (2024)

Module title			Abbreviation
Human Resource Management and Industrial Relations			12-M-HRM-242-m01
Module coordinator		**Module offered by**	
holder of the Chair for Human Resource Management and Organisation		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The lecture "Human Resource Management and Industrial Relations" introduces advanced theories, estimation techniques and empirical results from the areas of human resources management and institutional frameworks such as ithe different actors in ndustrial relations.

Syllabus
Introduction: Human Resource Management & Industrial Relations
Chapter 1: The employment contract
Chapter 2: Motivation
Chapter 3: Employee resistance against reorganisations
Chapter 4: The role of works councils
Chapter 5: Works councils and the employer wage structure
Chapter 6: The behaviour of labour unions
Chapter 7: Credentials and signaling
Chapter 8: Demographic challenges of HRM

Literature
Milgrom, Roberts (1992), Economics, Organization and Management, Prentice Hall, Englewood Cliffs
Picot, Dietl, Franck, Fiedler, Royer (2015), Organisation – Theorie und Praxis aus ökonomischer Sicht, 7. Auflage, Schäffer Poeschel, Stuttgart
Zwick (2003), Empirische Determinanten des Widerstandes von Mitarbeitern gegen Innovationen, Schmalenbachs Zeitschrift für betriebswirtschaftliche Forschung 55, 45-59
Freeman, Lazear (1995), An Economic Analysis of Works Councils, in Rogers, Streeck (eds.), Works Councils, Chicago, 27-50
Addison, Teixeira, Zwick (2010), Works Councils and the Anatomy of Wages, Industrial and Labor Relations Review 63 (2), 240-273
Atherton (1973), Theory of Union Bargaining Goals, Princeton University Press, Princeton, NJ.
Garibaldi (2006), Personnel Economics in Imperfect Labour Market, Oxford University Press, Oxford (chapter 6).
Mohrenweiser, Wydra-Somaggio, Zwick (2020), Information advantages of training employers despite credible training certificates, Oxford Economic Papers 72(3), 651-671.
Malmberg, Lindh, Halversson (2008), Productivity consequences of workforce aging: Stagnation or Horndal effect. In Prskawetz, Bloom, Lutz (eds.), Population and Development Review, Population Ageing, Human Capital Accumulation, and Productivity Growth (suppl. to Vol. 34), 238-256

Intended learning outcomes

The aim of the lectures is to enable students to understand and apply advanced theories, estimation techniques and empirical results in the area human resource management and industrial relations on the basis of scientific literature.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)
a) written examination (approx. 60 minutes) or b) term paper (approx. 15 pages) Language of assessment: English
Allocation of places
--
Additional information
--
Workload
150 h
Teaching cycle
Teaching cycle: summer semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Management International (2024) Master's degree (1 major) Management (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) International Economic Policy (2024) Master's degree (1 major) Economathematics (2024) Master's degree (1 major) Information Systems (2025) Master's degree (1 major) International Economic Policy (2025) Master's degree (1 major) Management (2025) Master's degree (1 major) Management International (2025) Master's degree (1 major) Adult Education and Management in Lifelong Education (2025) Master's degree (1 major) Applied Human Geography (2025) Master's degree (1 major) China Business and Economics (2025) Master's degree (1 major) China Language and Economy (2025) Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Project Management and Control	12-M-PROM-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Management, Controlling and Accounting	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The module focuses on the discussion and critical examination of instruments and methods used in the context of project management and control within enterprises. Special attention is being directed towards internal company projects that are associated with significant changes for those involved. Thus, alongside classical and agile project management approaches, theoretical foundations and methods of change management are also considered. The module covers characteristic features and structures of projects, their possible success factors, methods and instruments of control and management of projects in various project phases. The theoretical basis as well as potential applications of these instruments are discussed.

Intended learning outcomes

Initially, students acquire an understanding of project management and control tools as well as change management. Upon completion of the course, they are capable of analyzing and evaluating the strengths and weaknesses, as well as the application possibilities and limitations, of commonly used tools and methods in practice. Furthermore, they gain competencies in designing and advancing project management and controlling. Additionally, students are able to apply these tools and methods in practical settings.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 minutes)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: winter semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)

Module title			Abbreviation
Software Architecture			10-I=SAR-161-m01
Module coordinator		**Module offered by**	
holder of the Chair of Computer Science II		Institute of Computer Science	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Introduction to software architecture, architectural styles and patterns, software metrics, evaluation of architectural styles, software components, interface models and design guidelines, design-by-contract, component-based software engineering, service-oriented architectures, microservice architectures, scalability of databases, cloud-native and serverless computing, continuous integration, continuous delivery, continuous deployment, model-driven architecture

Intended learning outcomes

The students possess a fundamental and applicable knowledge about advanced topics in software engineering with a focus on modern software architectures and fundamental approaches to model-driven software engineering.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes).
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE,IT,ES

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 22 II Nr. 3 b)

Module appears in

Master's degree (1 major) Computer Science (2016)
Master's degree (1 major) Mathematics (2016)
Master's degree (1 major) Computational Mathematics (2016)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)
Master's degree (1 major) Computer Science (2017)
Master's degree (1 major) Computer Science (2018)

Module studies (Master) Computer Science (2019)
Master's degree (1 major) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (2019)
Master's degree (1 major) Information Systems (2019)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)
Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Computer Science (2025)
Master's degree (1 major) Economathematics (2025)
First state examination for the teaching degree Gymnasium Computer Science (2025)

Module title	Abbreviation
Change Management	12-M-ClU-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Management, Controlling and Accounting	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Within the module, theoretical basics of change management are covered. In addition, we present and jointly analyze existing change projects in detail. We try to answer related questions, too. For example, the module discusses how to involve stakeholders in change, what motivates them to embrace change, and whether participation is a universal principle. The module covers projects like merging two departments, restarting a department with team building, conducting an employee survey, or developing a new mission statement. The majority of the projects are taken from the social sector, but can be transferred to industry and SMEs.

Intended learning outcomes

After participating the lecture, students will be able to understand the occurrence of resistance and massive emotional reactions in change processes. Change processes can be critically analyzed and the use of typical instruments in change processes can be questioned. Students are able to identify the typical pitfalls and hurdles in these processes and are able to use their knowledge for own future projects as well as to create their own solutions in change processes.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) term paper (approx. 15 pages)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

Number of places: 16.
WA:
Should the number of applications exceed the number of available places, places will be allocated as follows:
(1) Students who already have successfully completed courses offered by the supervising chair will be given preferential consideration.
a. Among applicants with the same number of successfully completed modules, places will be allocated according to the total number of ECTS credits achieved in the corresponding modules.
b. When places are allocated in accordance with b) and the number of applications exceeds the number of available places, places will be allocated according to the average grade of assessments taken in the corresponding courses.
c. Among applicants with the same average grade, places will be allocated by lot.
(2) Any remaining places are available to students who have not yet successfully completed any courses of the supervising chair. The selection is made according to study progress (number of semesters); among applicants with the same number of semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

Additional information

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Workload
150 h
Teaching cycle
Teaching cycle: no courses offered
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Management (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) International Economic Policy (2024) Master's degree (1 major) Economathematics (2024)

Module title			Abbreviation
Entrepreneurship in Software-Ecosystems: Start & Scale Up, Venture Capital, Private Equity, EXIT			12-M-ESE-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Business Management and Business Information Systems		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This module is aimed at students of Wirtschaftsinformatik (Business Information Systems) and Wirtschaftswissenschaft (Business Management and Economics) who are interested in enterprise thinking, scaling, and software entrepreneurship. Therefore, this module focuses on the intersection of entrepreneurship, software ecosystems, and scale-up companies.

The module first provides a foundation for understanding entrepreneurship from a theoretical perspective. It covers value management, business model development, and organizational structures. This is followed by a deeper insight into the various aspects of practical business management, including daily doing, sales, financing, traction, KPIs measuring success and performance, and legal forms.

The main part of this module discusses how software-based companies can position themselves in the market and generate value through different business models and innovative strategies. Students will learn about the ecosystems of digital companies and the composition of their strategies. These strategies form the foundation for the growth of young companies, especially scale-ups. The module provides theoretical overviews, practical tools, and instruments for developing growth strategies. Various financing and exit strategies are also covered.

This module includes the following course contents, as summarized below:
- Introduction to Entrepreneurship, Digital Startup Ecosystems, and Process Models
- Value Management and Business Model Development
- Daily Doing, KPI, Traction and Project-Management
- Software Entrepreneurship: Software-based Value Chain
- Scale-Ups: Introduction, Growth, Tools and Strategies
- Exit Strategies

Intended learning outcomes

The "Entrepreneurship in Software-Ecosystems: Start & Scale Up, Venture Capital, Private Equity, EXIT" module aims to achieve the following learning outcomes:
1. Software-Based Business Models: Students will learn to understand software-based business models, manage daily operations, maintain traction, and implement KPI management.
2. Software Entrepreneurship: After completing the module, students will be able to define software entrepreneurship, analyze its ecosystems, and engage with value-enhancing strategies.
3. Corporate Structures and Growth: Participants will learn to build scalable structures, develop growth strategies, and practically apply scaling tools.
4. Exit Strategies: Students will become familiar with various exit strategies for businesses and assess their advantages and disadvantages.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or

b) oral examination (one candidate each: approx. 10 to 15 minutes, groups of 2: approx. 20 minutes, groups of 3: approx. 30 minutes) or
c) term paper (15 to 20 pages)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

Number of places: 50.
WA:
Should the number of applications exceed the number of available places, places will be allocated as follows:
(1) Students who already have successfully completed courses offered by the supervising chair will be given preferential consideration.
a. Among applicants with the same number of successfully completed modules, places will be allocated according to the total number of ECTS credits achieved in the corresponding modules.
b. When places are allocated in accordance with b) and the number of applications exceeds the number of available places, places will be allocated according to the average grade of assessments taken in the corresponding courses.
c. Among applicants with the same average grade, places will be allocated by lot.
(2) Any remaining places are available to students who have not yet successfully completed any courses of the supervising chair. The selection is made according to study progress (number of semesters); among applicants with the same number of semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: winter semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Selected Topics in Business Management and Economics 1	12-M-APW1-161-m01

Module coordinator	Module offered by
Dean of the Faculty of Business Management and Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module serves the purpose of transferring credits from
- courses taken at other German or non-German universities
- additional courses offered on a short-term basis
- courses offered by new Chairs that are yet to be included in the FSB (subject-specific provisions)

The holders of the respective Chairs will ensure that the courses are eligible for credit transfer.

Intended learning outcomes

As a result of accrediting multiple kinds of modules, a description of acquired skills cannot be given.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 to 90 minutes) or
b) written examination (questions concerning mathematical methodology; approx. 120 minutes) or
c) term paper (approx. 15 to 20 pages) or presentation (approx. 30 to 45 minutes)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: no courses offered

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Business Information Systems (2016)
Master's degree (1 major) Business Management (2015)
Master's degree (1 major) China Business and Economics (2016)
Master's degree (1 major) International Economic Policy (2015)
Master's degree (1 major) China Language and Economy (2016)
Master's degree (1 major) Management (2018)
Master's degree (1 major) International Economic Policy (2018)
Master's degree (1 major) China Business and Economics (2019)
Master's degree (1 major) China Language and Economy (2019)

Master's degree (1 major) Information Systems (2019)
Master's degree (1 major) China Business and Economics (2021)
Master's degree (1 major) China Language and Economy (2021)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) International Economic Policy (2022)
Master's degree (1 major) Management (2022)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)

Module title			Abbreviation
Selected Topics in Business Information Systems 1			12-M-AWI1-242-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Business Management and Economics		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This module serves the purpose of transferring credits from
- courses taken at other German or non-German universities
- additional courses offered on a short-term basis
- courses offered by new Chairs that are yet to be included in the FSB (subject-specific provisions)

The holders of the respective Chairs will ensure that the courses are eligible for credit transfer.

Intended learning outcomes

As a result of accrediting multiple kinds of modules, a description of acquired skills cannot be given.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English
Course type: alternatively S instead of V + Ü

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) presentation (15 to 20 minutes) with term paper (approx. 20 pages), weighted 1:2 or
c) oral examination (one candidate each: approx. 10 to 15 minutes; groups of 2: approx. 20 minutes; groups of 3: approx. 30 minutes)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: no courses offered

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)

Master's degree (1 major) China Language and Economy (2025)

Module title	Abbreviation
Topics in Enterprise Systems	12-M-TES-242-m01

Module coordinator	Module offered by
Dean of the Faculty of Business Management and Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module serves the purpose of transferring credits from
- courses taken at other German or non-German universities
- additional courses offered on a short-term basis
- courses offered by new Chairs that are yet to be included in the FSB (subject-specific provisions)

The holders of the respective Chairs will ensure that the courses are eligible for credit transfer.

Intended learning outcomes

As a result of accrediting multiple kinds of modules, a description of acquired skills cannot be given.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 to 90 minutes) or
b) written examination (questions concerning mathematical methodology; approx. 120 minutes) or
c) term paper (15 to 20 pages) or
d) presentation (30 to 45 minutes)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: after announcement

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) Economathematics (2025)

Track 2: Business Analytics

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Decision Support Systems			12-M-DSS-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Business Analytics		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The course discusses advanced approaches for modelling and solving decision problems in business settings. The acquired insights are used to design and implement decision support systems using standard software tools (Python).

Intended learning outcomes

After successfully completing the course, students should be able to
- Understand the structure of classic business decision problems
- Isolate key elements from general problem descriptions and convert them to quantitative decision models
- Solve different classes of optimization problems (linear, integer, non-linear, stochastic, dynamic)
- Implement decision support systems

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) oral examination (one candidate each: approx. 10 to 15 minutes, groups of 2: approx. 20 minutes, groups of 3: approx. 30 minutes)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: winter semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management International (2024)
Master's degree (1 major) Artificial Intelligence (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)

Master's degree (1 major) Management (2025)
Master's degree (1 major) Management International (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Advanced Operations & Logistics Management			12-M-AOLM-182-m01
Module coordinator		**Module offered by**	
holder of the Chair of Logistics and Quantitative Methods		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The course "Advanced Operations & Logistics Management" acquaints students with advanced methods for the planning of integrated production and logistics systems and demonstrates the application of these with the help of multiple case studies.

Intended learning outcomes

After completing this course students can
(i) analyze and evaluate integrated production and logistics systems;
(ii) develop and apply appropriate methods to plan complex production and logistics systems;
(iii) evaluate the consequences of uncertainties in processes, and
(iv) apply concepts and methods to plan uncertainties processes.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) term paper (approx. 15 to 20 pages)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2018)
Master's degree (1 major) International Economic Policy (2018)
Master's degree (1 major) China Business and Economics (2019)
Master's degree (1 major) China Language and Economy (2019)
Master's degree (1 major) Information Systems (2019)
Master's degree (1 major) China Business and Economics (2021)
Master's degree (1 major) China Language and Economy (2021)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Information Systems (2022)

Master's degree (1 major) International Economic Policy (2022)
Master's degree (1 major) Management (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Business Management and Economics (2022)
Master's degree (1 major) Management International (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Management International (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Analytical Information Systems	12-M-BI-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Analytics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The course provides a comprehensive introduction to data management, statistical methods, and machine learning. The module covers topics such as SQL, data integration, streaming data, and various learning methods in artificial intelligence, including neural networks.

Intended learning outcomes

- Understand data management, including data entry, annotation, and manipulation.
- Learn general statistical techniques for data inspection, exploration, and analysis.
- Effectively use machine learning approaches to perform predictive analytics.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 minutes)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management International (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Management International (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)

Master's degree (1 major) Economathematics (2025)

Core Electives

(10 ECTS credits)

Module title	Abbreviation
Analytical Information Systems	12-M-BI-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Analytics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The course provides a comprehensive introduction to data management, statistical methods, and machine learning. The module covers topics such as SQL, data integration, streaming data, and various learning methods in artificial intelligence, including neural networks.

Intended learning outcomes

- Understand data management, including data entry, annotation, and manipulation.
- Learn general statistical techniques for data inspection, exploration, and analysis.
- Effectively use machine learning approaches to perform predictive analytics.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 minutes)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management International (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Management International (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)

Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Enterprise AI			12-M-EAI-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Business Informatics and AI for Enterprise		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Introduction to Enterprise AI
Business Requirements for AI Systems
ML Ops I: Data Engineering
ML Ops II: Obtaining Training Data
ML Ops III: Data Preprocessing
ML Ops IV: Feature Engineering
ML Ops V: Modeling & Evaluation
ML Ops VI: Deployment
ML Ops VII: System Monitoring
ML Ops VIII: Updating in Production
Instrastructure and Tools
Managing Machine Learning Teams

Intended learning outcomes

In this course, you will learn the fundamentals for developing, deploying and maintaining machine learning systems in companies (MLOps). This includes an understanding of the associated IT infrastructure as well as staffing and organizational forms for managing machine learning and data science teams.

You will refine and test your skills by practicing the theoretical concepts during exercise sessions. This includes a team project, where you and your peers will develop and deploy your own machine learning system.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) term paper (approx. 15 pages) or
c) oral examination of one candidate each (approx. 20 minutes) or
d) portfolio (approx. 50 hours)
Language of assessment: English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

Number of places: 35. Should the number of applications exceed the number of available places, places will be allocated as follows:
(1) Students who already have successfully completed courses offered by the supervising chair will be given preferential consideration.
a. Among applicants with the same number of successfully completed modules, places will be allocated according to the total number of ECTS credits achieved in the corresponding modules.

b. When places are allocated in accordance with 1.b) and the number of applications exceeds the number of available places, places will be allocated according to the average grade of assessments taken in the corresponding courses.
c. Among applicants with the same average grade, places will be allocated by lot.
(2) Any remaining places are available to students who have not yet successfully completed any courses of the supervising chair. The selection is made according to study progress (number of semesters); among applicants with the same number of semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management International (2024)
Master's degree (1 major) Artificial Intelligence (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)

Module title	Abbreviation
Operations Research	10-I=OR-232-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science I	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Production plans, railway timetables, the assignment of radio frequencies, planning of delivery tours, or the construction of an 'optimal' university timetable: these problems – and many more – can be modeled as (mixed-) integer linear optimization problems and solved with integer programming methods.
This course teaches integer programming methods like branch-and-bound, cutting plane, and decomposition methods. Furthermore, we practice our modeling skills by studying a variety of application examples.

Intended learning outcomes

After completing the course
- The students are able to model optimization problems as mathematical program (in particular: mixed-integer linear programs).
- The students are able to apply integer programming methods and understand how and why these work.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): IN

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 22 II Nr. 3 b)

Module appears in

Master's degree (1 major) Information Systems (2019)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Mathematics (2024)

Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Computer Science (2025)
Master's degree (1 major) Economathematics (2025)
First state examination for the teaching degree Gymnasium Computer Science (2025)

Module title			Abbreviation
Global Logistics & Supply Chain Management			12-M-GLSC-182-m01
Module coordinator		**Module offered by**	
holder of the Chair of Logistics and Quantitative Methods		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The course "Global Logistics & Supply Chain Management" acquaints students with advanced methods for the planning of global production networks and demonstrates the application of these with the help of multiple case studies.

Intended learning outcomes

After completing this course students can
(i) analyze and evaluate global production networks;
(ii) develop and apply appropriate methods to plan production networks;
(iii) evaluate the consequences of uncertainties in processes and apply concepts and methods to plan uncertain processes.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) term paper (approx. 15 to 20 pages)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: winter semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2018)
Master's degree (1 major) International Economic Policy (2018)
Master's degree (1 major) China Business and Economics (2019)
Master's degree (1 major) China Language and Economy (2019)
Master's degree (1 major) Information Systems (2019)
Master's degree (1 major) China Business and Economics (2021)
Master's degree (1 major) China Language and Economy (2021)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Information Systems (2022)

Master's degree (1 major) International Economic Policy (2022)
Master's degree (1 major) Management (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Business Management and Economics (2022)
Master's degree (1 major) Management International (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Management International (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Topics in Data Science			12-M-ATDS-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Business Informatics and AI for Enterprise		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

In this course, students work on advanced data science projects. The course covers the entire data science workflow from data collection to data preparation to modeling, evaluation and deployment. By following a top-down teaching approach, students are enabled to apply complex machine learning models from the beginning.

Intended learning outcomes

As part of the course work, students will acquire knowledge and skills in the following areas:
1. Becoming familiar with the principles and frameworks in the research area of Data Science.
2. Apply machine learning and deep learning frameworks to structured and unstructured data
3. Design, implementation and evaluation of key algorithms within an end-to-end workflow in the field of Data Science
4. Application of Jupyter notebooks and their infrastructure (collection, storage, retrieval, and analysis of data)
5. Understanding of a data-driven & analytical approach to decision problems

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) term paper (approx. 15 pages) or
c) portfolio (approx. 50 hours)
Language of assessment: English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

Number of places: 35. Should the number of applications exceed the number of available places, places will be allocated as follows:
(1) Students who already have successfully completed courses offered by the supervising chair will be given preferential consideration.
a. Among applicants with the same number of successfully completed modules, places will be allocated according to the total number of ECTS credits achieved in the corresponding modules.
b. When places are allocated in accordance with 1.b) and the number of applications exceeds the number of available places, places will be allocated according to the average grade of assessments taken in the corresponding courses.
c. Among applicants with the same average grade, places will be allocated by lot.
(2) Any remaining places are available to students who have not yet successfully completed any courses of the supervising chair. The selection is made according to study progress (number of semesters); among applicants with the same number of semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

Additional information

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Workload
150 h
Teaching cycle
Teaching cycle: no courses offered
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Management International (2024) Master's degree (1 major) Management (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) International Economic Policy (2024) Master's degree (1 major) Economathematics (2024)

Module title			Abbreviation
Applied Data Science in Business and Economics			12-M-TE-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Data Science in Business and Economics		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This course aims to equip students with key empirical research methods and their applications in business and economics. The course will cover the development of empirical research ideas, research designs, data generation, data editing, and data analysis. The course will use a paper-based approach to introduce and apply these topics. Additionally, students will learn about existing panel datasets and be led to perform their own empirical research. Students that attend this course should have advanced knowledge in statistics and econometrics.

Intended learning outcomes

By the end of the course, students will have a comprehensive understanding of how to conduct empirical research in business and economics.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

portfolio (approx. 50 hours)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

exchange program Business Management and Economics (2022)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)

Module title	Abbreviation
Applied Data Analysis and Machine Learning	12-M-TDS-242-m01

Module coordinator	Module offered by
holder of the Junior Professorship of Microeconomics, esp. Economics of Digitization	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Data science is concerned with extracting knowledge and valuable insights from data assets. This course provides an introduction to data science and its application in business and economics. Participants will be familiarized with data handling in Python, data visualization, and various machine learning techniques for prediction and estimation. We will apply the acquired knowledge in topics from business and economics.

The course will be divided into two parts: the lecture where the techniques will be taught as well as exercise in which students will be able to work with data on their own.

Intended learning outcomes

In this module,
- students learn data handling and visualization in Python.
- students are familiarized with the development and evaluation of machine learning models.
- students gain an understanding of how to apply the taught techniques to real data sets.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) term paper (approx. 15 pages)
Language of assessment: English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management International (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)

Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Management International (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Organizational Economics and Digital Transformation	12-M-OEDT-231-m01

Module coordinator	Module offered by
holder of the Junior Professorship of Applied Microeconomics, esp. Human-Machine Interaction	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The course Organizational Economics and Digital Transformation introduces advanced topics in organizational economics, with a focus on economic decision-making within organizations. Concepts and tools from microeconomic theory, as well as empirical findings from field studies and laboratory experiments, are incorporated, such as those related to performance measurement and incentives, organizational structure, and authority. Additionally, the course integrates key aspects of digital transformation shaping modern business landscapes. Thus, students not only gain a solid overview of the fundamental principles of organizational economics but also insights into the challenges, opportunities, and strategies associated with the digital transformation of businesses.

Intended learning outcomes

With this course,

- students will be able to understand and reflect on modern microeconomic concepts and current organizational economics.
- students will learn to master and apply quantitative microeconomic methods.
- students will be enabled to classify and relate specialized knowledge from theoretical microeconomics, experimental and empirical microeconomics, business administration, and psychology.
- students learn how digital transformation impacts organizations and their architecture.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) term paper (approx. 15 pages)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: after announcement

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2018)

Master's degree (1 major) International Economic Policy (2018)
Master's degree (1 major) Information Systems (2019)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) International Economic Policy (2022)
Master's degree (1 major) Management (2022)
Master's degree (1 major) Management International (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)

Module title	Abbreviation
Selected Topics in Business Management and Economics 2	12-M-APW2-161-m01

Module coordinator	Module offered by
Dean of the Faculty of Business Management and Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module serves the purpose of transferring credits from
- courses taken at other German or non-German universities
- additional courses offered on a short-term basis
- courses offered by new Chairs that are yet to be included in the FSB (subject-specific provisions)

The holders of the respective Chairs will ensure that the courses are eligible for credit transfer.

Intended learning outcomes

As a result of accrediting multiple kinds of modules, a description of acquired skills cannot be given.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 to 90 minutes) or
b) written examination (questions concerning mathematical methodology; approx. 120 minutes) or
c) term paper (approx. 15 to 20 pages) or
d) presentation (approx. 30 to 45 minutes)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: no courses offered

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Business Information Systems (2016)
Master's degree (1 major) Business Management (2015)
Master's degree (1 major) China Business and Economics (2016)
Master's degree (1 major) International Economic Policy (2015)
Master's degree (1 major) China Language and Economy (2016)
Master's degree (1 major) Management (2018)
Master's degree (1 major) International Economic Policy (2018)
Master's degree (1 major) China Business and Economics (2019)

Master's degree (1 major) China Language and Economy (2019)
Master's degree (1 major) Information Systems (2019)
Master's degree (1 major) China Business and Economics (2021)
Master's degree (1 major) China Language and Economy (2021)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) International Economic Policy (2022)
Master's degree (1 major) Management (2022)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)

Module title	Abbreviation
Selected Topics in Business Information Systems 2	12-M-AWI2-242-m01

Module coordinator	Module offered by
Dean of the Faculty of Business Management and Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module serves the purpose of transferring credits from
- courses taken at other German or non-German universities
- additional courses offered on a short-term basis
- courses offered by new Chairs that are yet to be included in the FSB (subject-specific provisions)

The holders of the respective Chairs will ensure that the courses are eligible for credit transfer.

Intended learning outcomes

As a result of accrediting multiple kinds of modules, a description of acquired skills cannot be given.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English
Course type: alternatively S instead of V + Ü

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) presentation (15 to 20 minutes) with term paper (approx. 20 pages), weighted 1:2 or
c) oral examination (one candidate each: approx. 10 to 15 minutes; groups of 2: approx. 20 minutes; groups of 3: approx. 30 minutes)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: no courses offered

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)

Master's degree (1 major) China Language and Economy (2025)

Module title	Abbreviation
Topics in Business Analytics	12-M-TBA-242-m01

Module coordinator	Module offered by
Dean of the Faculty of Business Management and Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module serves the purpose of transferring credits from
- courses taken at other German or non-German universities
- additional courses offered on a short-term basis
- courses offered by new Chairs that are yet to be included in the FSB (subject-specific provisions)

The holders of the respective Chairs will ensure that the courses are eligible for credit transfer.

Intended learning outcomes

As a result of accrediting multiple kinds of modules, a description of acquired skills cannot be given.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 to 90 minutes) or
b) written examination (questions concerning mathematical methodology; approx. 120 minutes) or
c) term paper (15 to 20 pages) or
d) presentation (30 to 45 minutes)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: after announcement

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)

Master's degree (1 major) Economathematics (2025)

Track 3: Electronic Business

(20 ECTS credits)

Core

(10 ECTS credits)

Module title	Abbreviation
E-Business Strategies	12-M-IBS-242-m01

Module coordinator	Module offered by
holder of the Chair of Information Systems Engineering	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The module provides an overview of strategic implications of digital technologies at the level of organisations, industries and value networks. To this end, concepts and frameworks from strategic technology management are applied to digital innovations and illustrated with numerous examples. In the accompanying exercise, case studies of well-known digital companies and their business models are analysed and discussed.

Intended learning outcomes

- Become familiar with theoretical concepts of strategy development and implementation in the e-business context
- Understand the strengths and weaknesses of different frameworks and approaches as well as the prerequisites for their meaningful application
- Apply the concepts to case studies and derive action-oriented recommendations from them
- Learn how to transfer the concepts to other entrepreneurial situations from their studies or work

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) oral examination (one candidate each: approx. 10 to 15 minutes; groups of 2: approx. 20 minutes; groups of 3: approx. 30 minutes)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: winter semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management International (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)

Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Management International (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Mobile and Ubiquitous Business	12-M-MUS-242-m01

Module coordinator	Module offered by
holder of the Chair of Information Systems Engineering	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The module provides an overview of technologies and business applications of mobile networks, end devices, applications (including mobile commerce and payment) through to smart objects in a future "Internet of Things". Basic concepts and their use in practice are illustrated using numerous examples. In the accompanying exercise, corresponding case study texts are analyzed and discussed.

Intended learning outcomes

- Understanding the technological foundations and capabilities of mobile and ubiquitous systems and their integration into existing IS infrastructures
- Analyzing business applications in processes, products/services, and business models
- Analysis and evaluation of the operational and strategic implications of such technologies from a management perspective
- Application of the learned concepts to real management challenges based on case studies

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) oral examination (one candidate each: approx. 10 to 15 minutes; groups of 2: approx. 20 minutes; groups of 3: approx. 30 minutes)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management International (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)

Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Management International (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Corporate Entrepreneurship and Innovation			12-M-UGF1-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Entrepreneurship and Strategy		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This module is a theory-led and practice-oriented primer on corporate entrepreneurship. It provides you with knowledge useful for anyone aiming at working (or researching) in the field of corporate innovation and entrepreneurship or at pursuing an 'intrapreneurial' or entrepreneurial career.

(1) Introduction to corporate entrepreneurship
(2) Antecedents and forms of corporate entrepreneurship
(3) Corporate strategy and corporate entrepreneurship
(4) Organizational structure and corporate entrepreneurship
(5) Human resource management and corporate entrepreneurship
(6) Building supportive organizational cultures
(7) Entrepreneurial control systems
(8) Entrepreneurial leadership
(9) The corporate entrepreneur as a champion and diplomat
(10) The pay-off from corporate entrepreneurship
(11) Corporate venture capital
(12) Corporate entrepreneurship in nonprofit and government organizations
(13) Universities and academic spin-offs
(14) Wrap-up and Q&A

Intended learning outcomes

Educational aims

- Clarify the role of corporate entrepreneurship
- Explain theoretical concepts and mechanisms behind corporate entrepreneurship
- Enable students to critically appraise alternative approaches to corporate entrepreneurship
- Enable students to evaluate the boundaries and risks of corporate entrepreneurship

Learning outcomes

On successful completion of this module students will be able to:

- Create and evaluate concepts related to corporate entrepreneurship
- Assess the role of corporate entrepreneurship for creating and sustaining competitive advantage
- Make judgements about the organizational and managerial implications of corporate entrepreneurship
- Systematically choose between different routes of action

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 to 120 minutes) or
b) term paper (15 to 20 pages) or
c) oral examination of one candicate each (approx. 10 to 15 minutes) or oral examination in groups (groups of 2 approx. 20 minutes, groups of 3 approx. 30 minutes)
Language of assessment: English

Allocation of places
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Additional information
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Workload
150 h
Teaching cycle
Teaching cycle: winter semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Management International (2024) Master's degree (1 major) Management (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) International Economic Policy (2024) Master's degree (1 major) Economathematics (2024) Master's degree (1 major) Information Systems (2025) Master's degree (1 major) International Economic Policy (2025) Master's degree (1 major) Management (2025) Master's degree (1 major) Management International (2025) Master's degree (1 major) China Business and Economics (2025) Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Corporate Strategy	12-M-UGF2-182-m01

Module coordinator	Module offered by
holder of the Chair of Entrepreneurship and Strategy	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This theory-led and application-oriented module provides you with critical knowledge and skills related to corporate strategy—essential for anyone aspiring to take on leadership roles in their future career, may it be in the private or public sector. The module goes beyond basic knowledge about strategic management provided by bachelor-level modules.

(1) Developing strategies in pursuit of competitive advantage
(2) Corporate diversification
(3) Vertical integration and outsourcing
(4) Mergers & acquisitions
(5) Dynamic strategies
(6) Cooperative strategies
(7) Corporate spin-offs and spin-outs
(8) Internationalization strategies (I)
(9) Internationalization strategies (II)
(10) Strategic change
(11) Corporate strategies and new technologies
(12) Corporate governance and corporate social responsibility
(13) Corporate communication and crisis management
(14) Wrap-up and Q&A

Intended learning outcomes

Educational aims

- Clarify the role of corporate strategy
- Explain theoretical concepts and mechanisms behind corporate strategy
- Enable students to critically appraise alternative approaches to corporate strategy
- Enable students to evaluate the boundaries and risks of corporate strategy

Learning outcomes

On successful completion of this module students will be able to:

- Assess the role of corporate strategy for creating and sustaining competitive advantage
- Create and evaluate concepts related to corporate strategy
- Make judgements about the organizational and managerial implications of corporate strategy
- Systematically choose between different routes of action

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 to 120 minutes) or
b) term paper (15 to 20 pages) or
c) oral examination of one candidate each (approx. 10 to 15 minutes) or oral examination in groups (groups of 2 approx. 20 minutes, groups of 3 approx. 30 minutes)

Language of assessment: English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: winter semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2018)
Master's degree (1 major) International Economic Policy (2018)
Master's degree (1 major) China Business and Economics (2019)
Master's degree (1 major) China Language and Economy (2019)
Master's degree (1 major) Information Systems (2019)
Master's degree (1 major) China Business and Economics (2021)
Master's degree (1 major) China Language and Economy (2021)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) International Economic Policy (2022)
Master's degree (1 major) Management (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Business Management and Economics (2022)
Master's degree (1 major) Management International (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Management International (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Digital Entrepreneurship and Digital Transformation			12-M-UGF3-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Entrepreneurship and Strategy		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This module provides an introduction into digital entrepreneurship and digital transformation.

(1) Introduction
(2) Digital business models
(3) Identifying and exploiting opportunities for digital entrepreneurship
(4) Strategies for creating competitive advantage in digital entrepreneurship
(5) Digital marketing for entrepreneurs
(6) Crowdfunding for entrepreneurs
(7) Design thinking
(8) Lean startup
(9) Platform ecosystems and online communities
(10) Digital strategy and digital transformation
(11) The agile organization
(12) Crowdsourcing
(13) Cyberfraud
(14) Wrap-up and Q&A

Intended learning outcomes

Educational aims: Clarify the role of digital entrepreneurship and digital transformation. Explain theoretical concepts and mechanisms behind digital entrepreneurship and digital transformation. Enable students to critically appraise alternative approaches to digital entrepreneurship and digital transformation. Enable students to evaluate the boundaries and risks of digital entrepreneurship and digital transformation
Learning outcomes: On successful completion of this module students will be able to (1) Assess the role of digital entrepreneurship and digital transformation for creating and sustaining competitive advantage, (2) Create and evaluate concepts related to digital entrepreneurship and digital transformation, (3) Make judgements about the organizational and managerial implications of digital entrepreneurship and digital transformation, (4) Systematically choose between different routes of action.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 to 120 minutes) or
b) term paper (15 to 20 pages) or
c) oral examination (one candidate each: approx. 10 to 15 minutes; groups of 2: approx. 20 minutes; groups of 3: approx. 30 minutes)
Language of assessment: English

Allocation of places

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Additional information

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Workload
150 h
Teaching cycle
Teaching cycle: summer semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Management International (2024) Master's degree (1 major) Management (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) International Economic Policy (2024) Master's degree (1 major) Economathematics (2024) Supplementary course Supplementary course Entrepreneurship into Action (ZENTRIA) (2025) Master's degree (1 major) Information Systems (2025) Master's degree (1 major) International Economic Policy (2025) Master's degree (1 major) Management (2025) Master's degree (1 major) Management International (2025) Master's degree (1 major) China Business and Economics (2025) Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Marketing Analytics			12-M-MA-242-m01
Module coordinator		**Module offered by**	
holder of the Junior Professorship of Marketing Analytics		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Marketing analytics involves the collection, management, and analysis of data to gain insights into the performance of marketing activities. In fact, it is increasingly possible to use data analysis to inform, make, and even automate marketing decisions. The goal of this course is to provide students with a hands-on understanding of key methods and specific techniques used in marketing analytics. This requires substantive knowledge in marketing as well as of fundamental ideas at the intersection of statistics, economics, psychology, and computer science.

The course will cover fundamentals of data science, including data wrangling and data exploration, and will then turn to applied, real-world marketing analytics problems such as marketing mix modeling, market segmentation, and measuring preferences and demand. Emphasis will be placed on data visualization and valuable methods for causal inference in marketing. The course will also delve into a few advanced marketing topics. To provide a hands-on learning experience, the course will include practical applications of the covered content using the R programming language.

Intended learning outcomes

- Understand key methods and techniques used in marketing analytics and how to apply them to real-world problems.
- Learn to identify the appropriate analytical methods to use for specific marketing problems.
- Develop proficiency in data wrangling and data exploration techniques.
- Develop skills in data visualization and interpretation to effectively communicate marketing insights.
- Gain hands-on experience with the R programming language and apply it to solving marketing analytics problems.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 to 120 minutes) or
b) term paper (15 to 20 pages)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Management International (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Management International (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
E-Commerce			12-M-EC1-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Business Administration and Marketing		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

E-commerce is a highly relevant field for almost all types of companies. However, the ecommerce approaches and strategies applied by companies differ strongly depending on the respective firm context (e.g., in terms of industry, types of customers, types of products). In this seminar, students analyze the specific e-commerce strategy of a selected firm. In doing so, they evaluate the strategies' current and future potential and make suggestions for improvements and for addressing future trends. Furthermore, each lecture session will contain short presentations where the students (in groups) will either apply selected lecture topics to real-world business cases or present the core aspects of research articles dealing with e-commerce topics in general.

Intended learning outcomes

This class enables students to gain insights into real-life e-commerce strategies and to train their abilities in assessing business strategies.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 to 120 minutes) or
b) term paper (15 to 20 pages)
Language of assessment: English
creditable for bonus

Allocation of places

Number of places: 15.
WA:
Should the number of applications exceed the number of available places, places will be allocated as follows:
(1) Students who already have successfully completed courses offered by the supervising chair will be given preferential consideration.
a. Among applicants with the same number of successfully completed modules, places will be allocated according to the total number of ECTS credits achieved in the corresponding modules.
b. When places are allocated in accordance with b) and the number of applications exceeds the number of available places, places will be allocated according to the average grade of assessments taken in the corresponding courses.
c. Among applicants with the same average grade, places will be allocated by lot.
(2) Any remaining places are available to students who have not yet successfully completed any courses of the supervising chair. The selection is made according to study progress (number of semesters); among applicants with the same number of semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

Additional information

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Workload

150 h

Teaching cycle
Teaching cycle: summer semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Management (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) International Economic Policy (2024) Master's degree (1 major) Economathematics (2024)

Module title			Abbreviation
Strategic Management of Global Supply Chains			12-M-SMGS-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Logistics and Quantitative Methods		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Description:
In the course "Strategic Management of Global Supply Chains", students will become familiar with the basic principles of building an efficient global supply chain and will apply what they have learned working on multiple case studies.

Intended learning outcomes

After completing this course students
(i) can apply the basic methods and concepts of supply chain management to practical settings and evaluate the results, and
(ii) understand the effects of global value chains onto strategic company decisions.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 minutes)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: no courses offered

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management International (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Management International (2025)

Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Strategic Managerial Accounting	12-M-INST-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Management, Controlling and Accounting	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The module focuses on accounting instruments, which are applied in the context of strategic management of enterprises. First, it addresses important drivers of strategic decisions from a microeconomic perspective, such as the emergence of cost and quality advantages in competition as well as scale and experience curve effects. Second, the module covers analytical and heuristic techniques of planning and control. In the context of these techniques, instruments of target costing, life cycle cost analysis, benchmarking and business wargaming are discussed with regard to their theoretical foundation and fields of application.

Intended learning outcomes

Initially, students acquire an understanding of economic drivers of strategic decisions as well as fundamental requirements concerning instruments of decision-making and behavior control in enterprises. Upon completion of the course, they are able to analyze and evaluate the strengths and weaknesses, as well as fields of application and limitations, of prevalent instruments of strategic corporate management used in practice. Additionally, they develop competences in the design and further development of strategic instruments.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) term paper (approx. 15 pages)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)

Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Selected Topics in Business Management and Economics 3	12-M-APW3-161-m01

Module coordinator	Module offered by
Dean of the Faculty of Business Management and Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module serves the purpose of transferring credits from
- courses taken at other German or non-German universities
- additional courses offered on a short-term basis
- courses offered by new Chairs that are yet to be included in the FSB (subject-specific provisions)

The holders of the respective Chairs will ensure that the courses are eligible for credit transfer.

Intended learning outcomes

As a result of accrediting multiple kinds of modules, a description of acquired skills cannot be given.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 to 90 minutes) or
b) written examination (questions concerning mathematical methodology; approx. 120 minutes) or
c) term paper (approx. 15 to 20 pages) or
d) presentation (approx. 30 to 45 minutes)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: no courses offered

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Business Information Systems (2016)
Master's degree (1 major) Business Management (2015)
Master's degree (1 major) China Business and Economics (2016)
Master's degree (1 major) International Economic Policy (2015)
Master's degree (1 major) China Language and Economy (2016)
Master's degree (1 major) Management (2018)
Master's degree (1 major) International Economic Policy (2018)
Master's degree (1 major) China Business and Economics (2019)

Master's degree (1 major) China Language and Economy (2019)
Master's degree (1 major) China Business and Economics (2021)
Master's degree (1 major) China Language and Economy (2021)
Master's degree (1 major) International Economic Policy (2022)
Master's degree (1 major) Management (2022)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)

Module title			Abbreviation
Selected Topics in Business Information Systems 3			12-M-AWI3-242-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Business Management and Economics		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This module serves the purpose of transferring credits from
- courses taken at other German or non-German universities
- additional courses offered on a short-term basis
- courses offered by new Chairs that are yet to be included in the FSB (subject-specific provisions)

The holders of the respective Chairs will ensure that the courses are eligible for credit transfer.

Intended learning outcomes

As a result of accrediting multiple kinds of modules, a description of acquired skills cannot be given.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English
Course type: alternatively S instead of V + Ü

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) presentation (15 to 20 minutes) with term paper (approx. 20 pages), weighted 1:2 or
c) oral examination (one candidate each: approx. 10 to 15 minutes; groups of 2: approx. 20 minutes; groups of 3: approx. 30 minutes)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: no courses offered

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Information Systems (2025)

Module title			Abbreviation
Topics in Electronic Business			12-M-TEB-242-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Business Management and Economics		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This module serves the purpose of transferring credits from
- courses taken at other German or non-German universities
- additional courses offered on a short-term basis
- courses offered by new Chairs that are yet to be included in the FSB (subject-specific provisions)

The holders of the respective Chairs will ensure that the courses are eligible for credit transfer.

Intended learning outcomes

As a result of accrediting multiple kinds of modules, a description of acquired skills cannot be given.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 to 90 minutes) or
b) written examination (questions concerning mathematical methodology; approx. 120 minutes) or
c) term paper (15 to 20 pages) or
d) presentation (30 to 45 minutes)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: after announcement

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) Economathematics (2025)

Track 4: Artificial Intelligence

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Enterprise AI			12-M-EAI-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Business Informatics and AI for Enterprise		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Introduction to Enterprise AI
Business Requirements for AI Systems
ML Ops I: Data Engineering
ML Ops II: Obtaining Training Data
ML Ops III: Data Preprocessing
ML Ops IV: Feature Engineering
ML Ops V: Modeling & Evaluation
ML Ops VI: Deployment
ML Ops VII: System Monitoring
ML Ops VIII: Updating in Production
Instrastructure and Tools
Managing Machine Learning Teams

Intended learning outcomes

In this course, you will learn the fundamentals for developing, deploying and maintaining machine learning systems in companies (MLOps). This includes an understanding of the associated IT infrastructure as well as staffing and organizational forms for managing machine learning and data science teams.

You will refine and test your skills by practicing the theoretical concepts during exercise sessions. This includes a team project, where you and your peers will develop and deploy your own machine learning system.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) term paper (approx. 15 pages) or
c) oral examination of one candidate each (approx. 20 minutes) or
d) portfolio (approx. 50 hours)
Language of assessment: English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

Number of places: 35. Should the number of applications exceed the number of available places, places will be allocated as follows:
(1) Students who already have successfully completed courses offered by the supervising chair will be given preferential consideration.
a. Among applicants with the same number of successfully completed modules, places will be allocated according to the total number of ECTS credits achieved in the corresponding modules.

b. When places are allocated in accordance with 1.b) and the number of applications exceeds the number of available places, places will be allocated according to the average grade of assessments taken in the corresponding courses.
c. Among applicants with the same average grade, places will be allocated by lot.
(2) Any remaining places are available to students who have not yet successfully completed any courses of the supervising chair. The selection is made according to study progress (number of semesters); among applicants with the same number of semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management International (2024)
Master's degree (1 major) Artificial Intelligence (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)

Module title	Abbreviation
Analytical Information Systems	12-M-BI-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Analytics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The course provides a comprehensive introduction to data management, statistical methods, and machine learning. The module covers topics such as SQL, data integration, streaming data, and various learning methods in artificial intelligence, including neural networks.

Intended learning outcomes

- Understand data management, including data entry, annotation, and manipulation.
- Learn general statistical techniques for data inspection, exploration, and analysis.
- Effectively use machine learning approaches to perform predictive analytics.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 minutes)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management International (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Management International (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)

Master's degree (1 major) Economathematics (2025)

Core Electives

(10 ECTS credits)

Module title	Abbreviation
Computer Vision 1	10-AI=CV1-242-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science IV	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The lecture provides knowledge about current methods and algorithms in the field of computer vision. Important basics as well as the most recent approaches to image representation, image processing and image analysis are taught.
Topics include data representation, image acquisition, restoration and enhancement, features, object modeling, image and video understanding, deep learning and generative methods and applications.
Actual models and methods of machine learning as well as their technical backgrounds are presented and their respective applications in Computer Vision are shown.

Intended learning outcomes

Students have fundamental knowledge of problems and techniques in the field of computer vision and are able to independently identify and apply suitable methods for concrete problems.

- Overview of the most important concepts of image representation, image analysis, machine learning and algorithms from Computer Vision
- Gaining experience through home assignments, practical computer and programming exercises
- Providing a sound solid background knowledge for the advanced Computer Vision 2 course

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

Written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: every year, summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Artificial Intelligence & Extended Reality (2024)
Master's degree (1 major) Artificial Intelligence (2024)

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Topics in Data Science			12-M-ATDS-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Business Informatics and AI for Enterprise		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

In this course, students work on advanced data science projects. The course covers the entire data science workflow from data collection to data preparation to modeling, evaluation and deployment. By following a top-down teaching approach, students are enabled to apply complex machine learning models from the beginning.

Intended learning outcomes

As part of the course work, students will acquire knowledge and skills in the following areas:
1. Becoming familiar with the principles and frameworks in the research area of Data Science.
2. Apply machine learning and deep learning frameworks to structured and unstructured data
3. Design, implementation and evaluation of key algorithms within an end-to-end workflow in the field of Data Science
4. Application of Jupyter notebooks and their infrastructure (collection, storage, retrieval, and analysis of data)
5. Understanding of a data-driven & analytical approach to decision problems

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) term paper (approx. 15 pages) or
c) portfolio (approx. 50 hours)
Language of assessment: English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

Number of places: 35. Should the number of applications exceed the number of available places, places will be allocated as follows:
(1) Students who already have successfully completed courses offered by the supervising chair will be given preferential consideration.
a. Among applicants with the same number of successfully completed modules, places will be allocated according to the total number of ECTS credits achieved in the corresponding modules.
b. When places are allocated in accordance with 1.b) and the number of applications exceeds the number of available places, places will be allocated according to the average grade of assessments taken in the corresponding courses.
c. Among applicants with the same average grade, places will be allocated by lot.
(2) Any remaining places are available to students who have not yet successfully completed any courses of the supervising chair. The selection is made according to study progress (number of semesters); among applicants with the same number of semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

Additional information

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Workload
150 h
Teaching cycle
Teaching cycle: no courses offered
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Management International (2024) Master's degree (1 major) Management (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) International Economic Policy (2024) Master's degree (1 major) Economathematics (2024)

Module title			Abbreviation
Marketing Analytics			12-M-MA-242-m01
Module coordinator		**Module offered by**	
holder of the Junior Professorship of Marketing Analytics		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Marketing analytics involves the collection, management, and analysis of data to gain insights into the performance of marketing activities. In fact, it is increasingly possible to use data analysis to inform, make, and even automate marketing decisions. The goal of this course is to provide students with a hands-on understanding of key methods and specific techniques used in marketing analytics. This requires substantive knowledge in marketing as well as of fundamental ideas at the intersection of statistics, economics, psychology, and computer science.

The course will cover fundamentals of data science, including data wrangling and data exploration, and will then turn to applied, real-world marketing analytics problems such as marketing mix modeling, market segmentation, and measuring preferences and demand. Emphasis will be placed on data visualization and valuable methods for causal inference in marketing. The course will also delve into a few advanced marketing topics. To provide a hands-on learning experience, the course will include practical applications of the covered content using the R programming language.

Intended learning outcomes

- Understand key methods and techniques used in marketing analytics and how to apply them to real-world problems.
- Learn to identify the appropriate analytical methods to use for specific marketing problems.
- Develop proficiency in data wrangling and data exploration techniques.
- Develop skills in data visualization and interpretation to effectively communicate marketing insights.
- Gain hands-on experience with the R programming language and apply it to solving marketing analytics problems.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 to 120 minutes) or
b) term paper (15 to 20 pages)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Management International (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Management International (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Applied Data Science in Business and Economics			12-M-TE-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Data Science in Business and Economics		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This course aims to equip students with key empirical research methods and their applications in business and economics. The course will cover the development of empirical research ideas, research designs, data generation, data editing, and data analysis. The course will use a paper-based approach to introduce and apply these topics. Additionally, students will learn about existing panel datasets and be led to perform their own empirical research. Students that attend this course should have advanced knowledge in statistics and econometrics.

Intended learning outcomes

By the end of the course, students will have a comprehensive understanding of how to conduct empirical research in business and economics.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

portfolio (approx. 50 hours)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

exchange program Business Management and Economics (2022)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)

Module title	Abbreviation
Statistical Network Analysis	10-I=SNA-232-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science XV	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Networks matter! This holds for technical infrastructures like communication or transportation networks, for information systems and social media in the World Wide Web, but also for various social, economic and biological systems. What can we learn from data that capture the interaction topology of such complex systems? What is the role of individual nodes and how can we discover significant patterns in the structure of networks? How do these structures influence dynamical process like diffusion or the spreading of epidemics? Which are the most influential actors in a social network? And how can we analyze time series data on systems with dynamic network topologies?
Addressing those questions, the course combines a series of lectures -- which introduce fundamental concepts for the statistical modelling of complex networks -- with weekly exercises that show how we can apply them to practical network analysis tasks. Topics covered include foundations of graph theory, centrality and modularity measures, aggregate statistical characteristics of large networks, random graphs and statistical ensembles of complex networks, generating function analysis of expected graph properties, scale-free networks, stochastic dynamics in networks, spectral analysis, as well as the modelling of time-varying networks. The course material consists of annotated slides for lectures as well as a accompanying git-Repository of jupyter notebooks, which implement and validate the theoretical concepts covered in the lectures. Students can test and deepen their knowledge through weekly exercise sheets. The successful completion of the course requires to pass a final written exam.

Intended learning outcomes

The course will equip participants with statistical network analysis techniques that are needed for the data-driven modelling of complex technical, social, and biological systems. Students will understand how we can quantitatively model the topology of networked systems and how we can detect and characterize topological patterns. Participants will learn how to use analytical methods to make statements about the expected properties of very large networks that are generated based on different stochastic models. They further gain an analytical understanding of how the structure of networks shapes dynamical processes, how statistical fluctuations in degree distributions influence the robustness of systems, and how emergent network features emerge from simple random processes.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes).
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): IN

Workload
150 h
Teaching cycle
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Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Information Systems (2019) Master's degree (1 major) Information Systems (2022) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Aerospace Computer Science (2023) Master's degree (1 major) Computational Mathematics (2024) Master's degree (1 major) Management (2024) Master's degree (1 major) Mathematics (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) Economathematics (2024) Master's degree (1 major) Information Systems (2025) Master's degree (1 major) Management (2025) Master's degree (1 major) Computer Science (2025) Master's degree (1 major) Mathematical Data Science (2025) Master's degree (1 major) Economathematics (2025) Master's degree (1 major) Aerospace Computer Science (2025)

Module title	Abbreviation
Machine Learning for Natural Language Processing	10-I=NLP-212-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science X	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The lecture conveys advanced knowledge about methods in computational text processing. To this end, it presents state of the art models and techniques in the area of machine learning, as well as their technical background, and their respective applications in Natural Language Processing. As one important building block of almost all modern NLP-models, different techniques for learning representations of words, so called Word Embeddings, are presented. Starting from this we cover, among others, models from the area of Deep Learning, like CNNs, RNNs and Sequence-to-Sequence architectures. The theoretical foundations of these models, like their training with Backpropagation, are also covered in depth. For all models presented in the lecture, we show their application to problems like sentiment analysis, text generation and machine translation in practice.

Intended learning outcomes

The participants have solid knowledge on problems and methods in the area of computational text processing and are able to identify and apply suitable methods for a specific task.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): AT,KI,HCI

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 22 II Nr. 3 b)

Module appears in

Module studies (Master) Computer Science (2019)
Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Computer Science (2025)
Master's degree (1 major) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)
First state examination for the teaching degree Gymnasium Computer Science (2025)

Module title	Abbreviation
Multilingual NLP	10-I=MNLP-232-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science XII	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Languages of the world: language families, typology, etymology. Linguistic universals: words, morphology, parts-of-speech, syntax. Alphabets (scripts), encoding, and language identification. Multilingual word representation spaces (aka cross-lingual word embeddings). Transformer architecture and Pretrained (multilingual) Language Models. Machine translation. Multilingual resources: unlabeled corpora, lexico-semantic networks and word translations, parallel corpora. Cross-lingual transfer: from word alignment and label projection, over MT-based transfer to zero-shot and few-shot transfer with multilingual Transformer-based language models. Advanced topics: curse of multilinguality, modularization and language adaptation, multilingual sentence encoders, contextual parameter generation, multi-source transfer, gradient manipulations.

Intended learning outcomes

Students will acquire theoretical and practical knowledge on modern multilingual natural language processing and also get an insight into cutting edge research in (multilingual) NLP. They will learn how to represent texts from different languages in shared representation spaces that enable semantic comparison and cross-lingual transfer for various NLP tasks. Upon successful completion of the course, the students will be well-equipped to solve practical NLP problems regardless of the language of the text data, and to determine the optimal strategy to obtain best performance for any concrete target language.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: every year, summer semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 22 II Nr. 3 b)

Module appears in

Master's degree (1 major) Information Systems (2019)

Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Artificial Intelligence (2024)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Computer Science (2025)
Master's degree (1 major) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)
First state examination for the teaching degree Gymnasium Computer Science (2025)

Module title	Abbreviation
Selected Topics in Business Management and Economics 4	12-M-APW4-161-m01

Module coordinator	Module offered by
Dean of the Faculty of Business Management and Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module serves the purpose of transferring credits from
- courses taken at other German or non-German universities
- additional courses offered on a short-term basis
- courses offered by new Chairs that are yet to be included in the FSB (subject-specific provisions)

The holders of the respective Chairs will ensure that the courses are eligible for credit transfer.

Intended learning outcomes

As a result of accrediting multiple kinds of modules, a description of acquired skills cannot be given.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 to 90 minutes) or
b) written examination (questions concerning mathematical methodology; approx. 120 minutes) or
c) term paper (approx. 15 to 20 pages) or
d) presentation (approx. 30 to 45 minutes)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: no courses offered

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Business Information Systems (2016)
Master's degree (1 major) Business Management (2015)
Master's degree (1 major) China Business and Economics (2016)
Master's degree (1 major) International Economic Policy (2015)
Master's degree (1 major) China Language and Economy (2016)
Master's degree (1 major) Management (2018)
Master's degree (1 major) International Economic Policy (2018)
Master's degree (1 major) China Business and Economics (2019)

Master's degree (1 major) China Language and Economy (2019)
Master's degree (1 major) China Business and Economics (2021)
Master's degree (1 major) China Language and Economy (2021)
Master's degree (1 major) International Economic Policy (2022)
Master's degree (1 major) Management (2022)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)

Module title			Abbreviation
Selected Topics in Business Information Systems 4			12-M-AWI4-242-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Business Management and Economics		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This module serves the purpose of transferring credits from
- courses taken at other German or non-German universities
- additional courses offered on a short-term basis
- courses offered by new Chairs that are yet to be included in the FSB (subject-specific provisions)

The holders of the respective Chairs will ensure that the courses are eligible for credit transfer.

Intended learning outcomes

As a result of accrediting multiple kinds of modules, a description of acquired skills cannot be given.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English
Course type: alternatively S instead of V + Ü

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 minutes) or
b) presentation (15 to 20 minutes) with term paper (approx. 20 pages), weighted 1:2 or
c) oral examination (one candidate each: approx. 10 to 15 minutes; groups of 2: approx. 20 minutes; groups of 3: approx. 30 minutes)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: no courses offered

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Information Systems (2025)

Module title	Abbreviation
Topics in Artificial Intelligence	12-M-TAI-242-m01

Module coordinator	Module offered by
Dean of the Faculty of Business Management and Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module serves the purpose of transferring credits from
- courses taken at other German or non-German universities
- additional courses offered on a short-term basis
- courses offered by new Chairs that are yet to be included in the FSB (subject-specific provisions)

The holders of the respective Chairs will ensure that the courses are eligible for credit transfer.

Intended learning outcomes

As a result of accrediting multiple kinds of modules, a description of acquired skills cannot be given.

Courses (type, number of weekly contact hours, language — if other than German)

V (2) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) written examination (approx. 60 to 90 minutes) or
b) written examination (questions concerning mathematical methodology; approx. 120 minutes) or
c) term paper (15 to 20 pages) or
d) presentation (30 to 45 minutes)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: after announcement

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)

Master's degree (1 major) Economathematics (2025)

Compulsory Electives III: Seminar

(10 ECTS credits)

Module title	Abbreviation
Advanced Seminar: Marketing Strategy	12-M-MSS-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Administration and Marketing	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

In this course, students will acquire important knowledge and skills that will enable them to prepare a well-structured paper and to present the results of their work with the help of relevant topics in the fields of strategic marketing and strategic management.

Reading: will vary according to topic

Intended learning outcomes

After completing the course "Marketing Strategie", students will be able to
1. understand the fundamentals of scientific literature reviews;
2. integrate elaborated content in a scientific thesis;
3. create presentations independently.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: German and/or English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)

Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Advanced Seminar: Industrial Management	12-M-SI-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Management and Industrial Management	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

In the seminar, students will write seminar papers on selected topics in the field of industrial management. The central issues and findings of these papers will have to be presented in class.

Intended learning outcomes

The students have acquired in-depth knowledge in key application areas of industrial management and learned by taking care of the seminar to deepen their knowledge for making scientific work, to research literature necessary, to filter, to evaluate, tu critically analyze and to ask each other. On this basis, and, where appropriate, with introduction of own scientifically based further developments, the participants will learn to prepare a written contribution to the topic of Industrial Management, which complies with the principles of scientific work. Through the lecture, students learn to present selected content of their housework in a suitable form and a predetermined time frame and to defend the findings in the course of a critical, scientific discussion.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

a) term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1 or
b) term paper (15 to 20 pages) and presentation (approx. 45 minutes), weighted 1:1
Language of assessment: German and/or English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)

Master's degree (1 major) Economathematics (2024)

Module title	Abbreviation
Advanced Seminar: Financial Accounting	12-M-SER-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Management and Accounting	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

In this module, students engage with academic topics in the fields of Accounting and Finance. The seminar serves as a preliminary stage for the master's thesis and aims to prepare students to learn important aspects of academic work. Students will be supported in identifying an area of interest and developing a research question.

Students should have an interest in a topic from the field of accounting or finance that belongs to one of the following areas:

- Financial Accounting
- Corporate Disclosure
- Sustainability Reporting
- Reporting Standard Setting
- Capital Markets
- Valuation
- Digital Transformation in Accounting
- Auditing
- Corporate Governance

Intended learning outcomes

Upon completion of this module, students will be able to:

- Identify and motivate an economic research question in the field of Accounting or Finance;
- Find relevant scientific literature and interpret and analyze it with regard to the research question;
- Conduct a scientific discussion based on scientific facts and arguments.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes) (weighted 2:1)
Language of assessment: German and/or English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle
Teaching cycle: each semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Management (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) Economathematics (2024) Master's degree (1 major) Information Systems (2025) Master's degree (1 major) Management (2025) Master's degree (1 major) China Business and Economics (2025) Master's degree (1 major) China Language and Economy (2025) Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Advanced Seminar: Corporate Finance	12-M-SBL-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Management and Corporate Finance	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The module is held as a seminar. Topics from the financial sector and company valuation will be assigned. The students work independently on the respective problems and prepare a term paper. This can be strongly literature-based, empirical or by working independently with formal models. A paper on the topic is to be given.

Intended learning outcomes

Students acquire in-depth knowledge in important areas of application in banking management theory, corporate finance and valuation. Students are able to work independently on more in-depth problems within the above-mentioned subject areas, to prepare them in structured written form and to present them in a lecture.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: German and/or English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)

Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Advanced Seminar: Analytical Tax Research	12-M-SSL-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Management and Business Taxation	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

In this seminar, current problems of tax research will be analysed. Usually, students will read and discuss research papers in German and/or English language.
Although the seminar will be held in German, individual seminar papers may be written and discussed in English if a participant prefers this to German.

Intended learning outcomes

After the seminar, students are able
- to analyze a complex issue in taxation using research methods,
- to identify problems and to suggest solutions,
- to formulate and to defend their analysis and suggested solutions.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: German and/or English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)

Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Advanced Seminar: Enterprise Systems	12-M-ES-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Management and Business Information Systems	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The seminar offers a comprehensive introduction to key concepts and methods that are relevant for both research and practice in the field of information systems. This module is designed for students preparing to write their own research papers and subsequently present and discuss them.

The following contents and methods are covered in the seminar: Subject-specific contents vary individually depending on the paper, for example in areas such as:

- Process and Data Modeling: Students learn how business processes and underlying data structures are modeled in companies.
- Augmented Business Process Management (BPM): Advanced study in augmented BPM systems that utilize artificial intelligence to optimize and adapt business processes.
- Hyperautomation: Integration of Robotic Process Automation (RPA) and AI to automate complex business processes.
- Application of AI and Machine Learning: Use of AI-based Decision Support Systems to improve decision-making and process efficiency.

Methodological contents vary individually depending on the paper, for example:

- Literature Research: Conducting structured literature searches in respective subject areas.
- Design Science Research and Prototyping: Introduction to research designs that involve the development and evaluation of new technologies.
- Empirical and Mathematical-Formal Methods: Application of statistical methods and mathematical models for investigating and validating theories.

The seminar aims to impart not only theoretical knowledge but also practical skills that students can directly incorporate into the creation of their own research works. These works will then be presented and critically discussed in an academic setting, where both the depth of content and the execution of methodology are evaluated.

Intended learning outcomes

The "Seminar: Enterprise Systems" module aims to achieve the following learning outcomes:

1. Professional Competence: Students develop and deepen their knowledge in business informatics by independently addressing a scientific question. They apply current research methods and integrate expertise into their work process. They acquire the ability to analyze scientific results, reflect on them critically, and assess their significance in the context of business informatics.
2. Methodological Competence: Students learn to plan and conduct scientific research processes. This includes the application of research methods, data collection and analysis, and the use of scientific software. They practice critical thinking and solving complex problems, which enables flexible application of the learned knowledge in new or changed situations.
3. Social Competence: Presenting research results and discussing them with fellow students and lecturers strengthens communicative competence. Students learn to convey their ideas clearly and convincingly and to react constructively to feedback.
4. Personal Competence: By independently working on a scientific topic, students develop a high degree of self-organization and time management. Engaging with scientific challenges promotes personal development, such as the ability to self-reflect and ethical awareness in handling research content.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)

Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: German and/or English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Advanced Seminar: Topics in Personnel Economics and Organizational Theory			12-M-SPO-242-m01
Module coordinator		**Module offered by**	
holder of the Chair for Human Resource Management and Organisation		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Students will write a seminar paper on, deliver a talk on and discuss current issues in the field of human resources management and organisation. Topics will be announced for each seminar separately.

Intended learning outcomes

The students learn to handle, write in own words, present, and discuss current research literature in the area human resource management and organisation.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (approx. 20 pages) and presentation with sub-presentation including discussion (approx. 50 minutes), weighted 1:1
Language of assessment: English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)

Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Advanced Seminar: Entrepreneurship and Management	12-M-SAS-242-m01

Module coordinator	Module offered by
holder of the Chair of Entrepreneurship and Strategy	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Students develop seminar papers on varying topics in the domain of entrepreneurship, strategy, and innovation and present the key insights from their work.

Intended learning outcomes

Educational aims

- Enable students to position their research
- Enable students to critically review a substantial body of literature in short time
- Enable students to develop a sound theoretical framework
- Enable students to create a research paper fully meeting academic standards

Learning outcomes

On successful completion of this module students will be able to:

- Differentiate their research from previous work
- Adopt theoretical perspectives to understand complex phenomena
- Engage in comprehensive academic reasoning
- Articulate abstract and complex phenomena and relationships in written and oral form

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (approx. 20 pages) and presentation (15 to 30 minutes), weighted 2:1
Language of assessment: German and/or English
Assessment offered: Once a year, winter semester

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Advanced Seminar: Managerial Accounting	12-M-AUAS-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Management, Controlling and Accounting	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

In this course, students will acquire important knowledge and skills that will enable them to prepare a well-structured paper and to present the results of their work by means of relevant topics in the field of managerial accounting. Students independently analyze a selected topic and write a seminar thesis based on literature and/or own empirical work. They present, discuss, and defend their thesis.

Intended learning outcomes

After completion of the seminar, students will be able to

- answer complex questions from the field of managerial accounting at a scientific level;
- conduct scientific literature research in a targeted manner and understand its contents as well as apply further scientific methods to answer questions;
- integrate acquired results into scientific papers;
- independently create presentations and lectures in which they present complex content in an understandable manner and effectively communicate it.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (15 to 20 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: German and/or English
Assessment offered: Once a year, summer semester
creditable for bonus

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)

Module title			Abbreviation
Business Analytics			12-M-BUA-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Business Analytics		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

In this course, students will acquire important knowledge and skills that will enable them to prepare a well-structured term paper and to present the results of their work with the help of relevant topics in the field of business management decision models and methods and their application in the development of decision-support systems as well as analytical information systems and quantitative methods of data analysis.

Students work on current topics using methods from machine learning, mathematical optimization and simulation.

Intended learning outcomes

The module provides students with knowledge of:
- Scientific literature
- Implementation of methods in code
- Integration of developed results in scientific papers
- Creating presentations and lectures

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: German and/or English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)

Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Seminar: Applied Analytics in Logistics & Supply Chain Management	12-M-LSCM-242-m01

Module coordinator	Module offered by
holder of the Chair of Logistics and Quantitative Methods	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Quantitative planning approaches are particularly valuable for designing logistics systems and supply chains. They support decision makers in taking important strategic, tactical, and operational decisions by providing well-founded and relevant information. Many of these decisions have significant impact on the competitiveness of companies because they considerably influence today's as well as tomorrow's costs and revenues. The adoption of quantitative planning methods has been strongly supported by the development of information and communication systems: Advanced tools are available at low costs, versatile methods to model and solve planning problems have been integrated in standard software, the user friendliness has improved, and last but not least: the access to necessary data has substantially progressed (i.e. through ERP systems).

Intended learning outcomes

The main objective of this seminar is to familiarize participants with diverse quantitative planning problems and potential solutions. Planning procedures are applied to solve real problems in companies. Participants in this seminar learn about actual planning problems in Logistics and Supply Chain Management; they analyze and understand how companies address these problems.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: German and/or English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)

Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Economic and Business Ethics			12-M-WUE-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Business Management and Business Taxation		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

In this seminar, students will gain an overview of different ethical aspects in business and economy, e. g. leadership ethics, corruption, ethcial theories, consumer ethics, CSR.

Intended learning outcomes

Using common scientific methods the student should be able to write a seminar paper dealing with a selected ethcial problem in business and/or economiy. He/she should be able to present a complex problem in an clear and understandable way und he/she should discuss the arguments with other participants in the class.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: German and/or English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)

Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Practical Seminar: Economic Journalism	12-M-SWJ-242-m01

Module coordinator	Module offered by
holder of the Professorship of Economic Journalism	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Students will acquire an in-depth insight into the practical side of economics journalism. They must complete their placements at company or other institution at which they will have an opportunity to gain an in-depth knowledge of economics journalism. Students will be required to prepare a practical report on the placement module as well as to submit proof of regular attendance and participation. In addition, a certificate issued by the placement company is to be submitted.

Intended learning outcomes

The module strengthens practical competences and encourages work experiences. It prepares for the career start in economics journalism.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

portfolio on observation visit, including work samples (approx. 40 pages)
Language of assessment: German and/or English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)

Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Project Modul: Journalism in Economic Policy	12-M-WPJ-242-m01

Module coordinator	Module offered by
holder of the Professorship of Economic Journalism	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Economic journalism is often regarded as unwieldy, but the reporting usually revolves around content that many media users can relate to: The focus is on market developments and (economic) political conditions. How can these topics be presented in a way that is clear, easy to understand, and yet as precise as possible? What makes for good economic reporting? What research options and forms of presentation are available? Such questions will first be answered using examples from various media. Subsequently, the students will work on the main topic themselves. The seminar is thematically oriented towards current research projects/projects of the Chair of Business Journalism and Business Communication and can therefore vary thematically per semester.

Intended learning outcomes

Students learn the terminology, topics, and framework of economic journalism. After completing the seminar they will have an overview of selected areas of application. They master the research and the different forms of presentation of economic journalism. The students learn scientific methods to break down complex economic topics in reporting. After completing the seminar, students are able to independently examine journalistic products in response to previously generated research questions and thus evaluate journalistic work. Therefore, students acquire subject as well as specific methodological competencies in this seminar.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

portfolio (e. g. record of research activities, commentary, text analyses of different types of media); approx. 3 items with a duration of 3 minutes each, audio/video format or text format approx. 20 pages
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: after announcement

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in
Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Project: Selected Topics in Business Management and Economics I			12-M-APS-242-m01

Module coordinator	Module offered by
Dean of the Faculty of Business Management and Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module serves the purpose of transferring credits from
- courses taken at other German or non-German universities
- additional courses offered on a short-term basis
- courses offered by new Chairs that are yet to be included in the FSB (subject-specific provisions)

The holders of the respective Chairs will ensure that the courses are eligible for credit transfer.

Intended learning outcomes

As a result of accrediting multiple kinds of modules, a description of acquired skills cannot be given.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (approx. 20 pages) and presentation (approx. 20 minutes); (weighted 2:1)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: after announcement

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)

Module title			Abbreviation
Project: Selected Topics in Business Management and Economics II			12-M-APS2-242-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Business Management and Economics		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This module serves the purpose of transferring credits from
- courses taken at other German or non-German universities
- additional courses offered on a short-term basis
- courses offered by new Chairs that are yet to be included in the FSB (subject-specific provisions)

The holders of the respective Chairs will ensure that the courses are eligible for credit transfer.

Intended learning outcomes

As a result of accrediting multiple kinds of modules, a description of acquired skills cannot be given.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (approx. 20 pages) and presentation (approx. 20 minutes); (weighted 2:1)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: after announcement

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)

Module title	Abbreviation
International Economics 1	12-M-ATIÖ1-242-m01

Module coordinator	Module offered by
holder of the Chair of International Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Content:
Current topics in international economics and economic geography [e.g. Urbanization and Inequality; Tasks, Trade, and Cities; Outsourcing, Offshoring and Multinational Firms; Competition of Locations, Jurisdictions and Systems; Globalization and the Environment; Trade, Multinational Firms and Labor Markets; Triumph of the City]

Literature:
Peer-reviewed articles and/or monographs.

Intended learning outcomes

Drawing on current cutting-edge research, students are enabled to analyze current research questions and to learn and apply research methods. The seminar style of the course teaches them to present their own seminar papers and research both in written and in oral form. Students are enabled to critically analyze and discuss the work of their peers.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (approx. 15 pages) and presentation (approx. 40 minutes) with thesis paper (1 page) (weighted 3:1)
Language of assessment: English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: after announcement

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)

Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
International Economics 2			12-M-ATIÖ2-242-m01

Module coordinator	Module offered by
holder of the Chair of International Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Content
Current topics in international economics and economic geography [e.g. Urbanization and Inequality; Tasks, Trade, and Cities; Outsourcing, Offshoring and Multinational Firms; Competition of Locations, Jurisdictions and Systems; Globalization and the Environment; Trade, Multinational Firms and Labor Markets; Triumph of the City]

LiteraturePeer-reviewed articles and/or monographs.

Intended learning outcomes

Drawing on current cutting-edge research, students are enabled to analyze current research questions and to learn and apply research methods. The seminar style of the course teaches them to present their own seminar papers and research both in written and in oral form. Students are enabled to critically analyze and discuss the work of their peers.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (approx. 15 pages) and presentation (approx. 40 minutes) with thesis paper (1 page) (weighted 3:1)
Language of assessment: English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: after announcement

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)

Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
International Economics 3			12-M-ATIÖ3-242-m01

Module coordinator	Module offered by
holder of the Chair of International Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Content:
Current topics in international economics and economic geography [e.g. Urbanization and Inequality; Tasks, Trade, and Cities; Outsourcing, Offshoring and Multinational Firms; Competition of Locations, Jurisdictions and Systems; Globalization and the Environment; Trade, Multinational Firms and Labor Markets; Triumph of the City]

Literature:
Peer-reviewed articles and/or monographs.

Intended learning outcomes

Drawing on current cutting-edge research, students are enabled to analyze current research questions and to learn and apply research methods. The seminar style of the course teaches them to present their own seminar papers and research both in written and in oral form. Students are enabled to critically analyze and discuss the work of their peers.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (approx. 15 pages) and presentation (approx. 40 minutes) with thesis paper (1 page) (weighted 3:1)
Language of assessment: English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: after announcement

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)

Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Seminar: International Economics	12-M-AMTIÖ-242-m01

Module coordinator	Module offered by
holder of the Chair of International Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Content:
Current topics in international economics and economic geography [e.g. Urbanization and Inequality; Tasks, Trade, and Cities; Outsourcing, Offshoring and Multinational Firms; Competition of Locations, Jurisdictions and Systems; Globalization and the Environment; Trade, Multinational Firms and Labor Markets; Triumph of the City]

Literature:
Peer-reviewed articles and/or monographs.

Intended learning outcomes

Drawing on current cutting-edge research, students are enabled to analyze current research questions and to learn and apply research methods. The seminar style of the course teaches them to present their own seminar papers and research both in written and in oral form. Students are enabled to critically analyze and discuss the work of their peers.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (approx. 15 pages) and presentation (approx. 40 minutes) with thesis paper (1 page) (weighted 3:1)
Language of assessment: English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)

Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Advanced Seminar: Industrial Organization	12-M-SIO-242-m01

Module coordinator	Module offered by
holder of the Chair of Industrial Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This course covers selected advanced topics from the field of industrial economics. Students, with the help of their advisor, will choose a topic and formulate a research question. Then they are expected to conduct research and write a paper on this research question (20-30 pages). At the end of the semester the students will present their findings orally to an audience.

Intended learning outcomes

After completing the course "Seminar: Industrieökonomik", students will be able to
1. perform a survey of the scientific literature on a given topic;
2. critically assess the economic models and their findings in the literature;
3. describe the economic mechanisms underlying important economic observations;
4. suggest future research directions;
5. present their findings to an audience.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (approx. 20 pages) and presentation (approx. 20 minutes); (weighted 2:1)
Language of assessment: English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)

Module title	Abbreviation
Advanced Seminar: Labour Economics	12-M-SWOSP-242-m01

Module coordinator	Module offered by
holder of the Chair of Labour Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This seminar targets any students interested in acquiring the skills to conduct an empirical study to understand people's social behavior and social preferences. We will read and discuss scientific methodological papers that allow students to acquire the necessary empirical tools to conduct an empirical thesis.
The recurring topic will be related to the origins of social cohesion and social preferences, the role of the family and the school in shaping children's social behavior and preferences.

Intended learning outcomes

This seminar is designed to acquire the skills to write a master thesis at the Chair of Labour Economics. It focuses on the acquisition of empirical tools - mostly related to experimental empirical tools - in order to understand the determinants of social behavior and preferences.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: after announcement

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)

Module title			Abbreviation
Advanced Seminar: Public Finance			12-M-SV5-242-m01
Module coordinator		**Module offered by**	
holder of the Chair of Public Finance		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Gaining a more in-depth understanding of specific problems discussed in lectures on public finance using scientific economic journal articles in German and English language.

Intended learning outcomes

After the seminar, students can
(i) consolidate acquired knowledge and if necessary apply additional techniques of scientific work;
(ii) create, present and defend a scientific paper;
(iii) deal with the working papers of other participants;
(iv) prepare beter for the processing of the master's thesis.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: English
Assessment offered: Once a year, summer semester

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Econmathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)

Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Advanced Seminar: Econometrics	12-M-SOE-242-m01

Module coordinator	Module offered by
holder of the Chair of Econometrics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module will take the form of a seminar and will cover advanced topics in econometrics. Students will be required to independently familiarise themselves with the respective topics and to present the results of their work both in a seminar paper and orally during a seminar session.

Intended learning outcomes

Students are able to analyze independently academic publications on their relevance for a given theme. They can present the results orally and in writing by conventional scientific standards.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (approx. 15 pages) and presentation (approx. 20 minutes); (weighted 2:1)
Language of assessment: English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)

Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Seminar: Macroeconomics and Quantitative Economic Research			12-M-MEW-242-m01
Module coordinator			**Module offered by**
head of the Work Group of Empirical Economics			Faculty of Management and Economics
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This course will provide students with a more in-depth understanding of specific problems of macroeconomics and quantitative economic research. A current list of topics, from which students may select one, is available on my website.

Intended learning outcomes

After the seminar, students can
(i) consolidate acquired knowledge and if necessary apply additional techniques of scientific work;
(ii) create, present and defend a scientific paper;
(iii) deal with the working papers of other participants;
(iv) prepare better for the processing of the master's thesis.
(v) already apply methodological knowledge in econometrics/programming

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)

Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Seminar: Strategic Incentive Design	12-M-ATC-242-m01

Module coordinator	Module offered by
holder of the Chair for Economics, Contract Theory and Information Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module covers varying classical or recent topics from microeconomics, usually with a focus on decision theory, contract theory or behavioral economics. As a solid understanding of the corresponding basics will be helpful, the course is intended in particular for advanced students who completed the classes "Advanced Micoeconomics" and "Contract Theory".

Intended learning outcomes

After completing the course students will have gathered experience in
- reading and understanding theoretical or experimental research articles,
- critically analyzing and discussing the results of research articles,
- relating the results of different research articles to each other,
- conveying their insights both verbally and in writing in accordance with common scientific standards.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)

Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Seminar: E-Business Strategies			12-M-SEBS-242-m01
Module coordinator			**Module offered by**
holder of the Chair of Information Systems Engineering			Faculty of Management and Economics
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

In this course, students will acquire important knowledge and skills that will enable them to prepare a well-structured term paper and to present the results of their work with the help of relevant topics in E-Business.

Intended learning outcomes

- Academic literature review
- Integration of developed results in scientific papers
- Creating presentations and talks

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: German and/or English
Assessment offered: Once a year, winter semester

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Economathematics (2024)

Module title	Abbreviation
Seminar: Topics in Economics and Ethics of Artificial Intelligence	12-M-TEE-242-m01

Module coordinator	Module offered by
holder of the Junior Professorship of Applied Microeconomics, esp. Human-Machine Interaction	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

With the increasing effectiveness of machine learning and artificial intelligence (AI) methods, there is growing interest in understanding the potentially disruptive impact of these technologies. Artificial intelligence powers Google's search engine, enables targeted ads, is also behind self-driving cars, predictive policing, and autonomous weapons. Our goal is to look beyond the "hype" around AI by considering current research that attempts to provide a rigorous answer to questions related to the impact of AI. In particular, we will seek to understand the consequences of AI from an economic perspective by looking at non-technical AI research.

In this seminar, we will discuss recent articles on important aspects of human-machine interaction. From an economic perspective, we look at the impact of algorithms in the workplace and in decision-making, as well as behavioral economic factors involved in interacting with machines. In addition, we consider ethical issues related to artificial intelligence, moral dilemmas, and the potential impacts of increasingly powerful AI on business and society.

Intended learning outcomes

With this seminar,

- students learn how to present research in a structured manner, both orally and in writing.
- students will be equipped to understand and reflect on advanced current theoretical and empirical economic studies, especially in the domain of human-machine interaction.
- students will learn to incorporate ethical concerns in their economic decision-making processes.
- students will be able to classify and relate specialized knowledge from behavioral economics, business administration, and psychology.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (15 to 20 pages) and presentation (approx. 30 minutes); (weighted 60:40)
Language of assessment: English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle
Teaching cycle: summer semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Management (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) International Economic Policy (2024) Master's degree (1 major) Economathematics (2024)

Module title			Abbreviation
Research Seminar in Applied Data Science			12-M-RS-242-m01
Module coordinator			**Module offered by**
holder of the Chair of Data Science in Business and Economics			Faculty of Management and Economics
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Building on their knowledge of empirical research methods, students in this course will learn to develop their own ideas for empirical research, research designs, data generation, data preparation and data analysis. Students taking this course should have an advanced knowledge of statistics and econometrics.

Intended learning outcomes

Students are introduced to the latest research questions and methods using exciting literature; they learn to analyze these topics critically and independently using seminar-based methods and to present them both orally and in writing and to critically examine the work results of other seminar participants.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: after announcement

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)

Module title	Abbreviation
Enterprise AI and Urban Analytics	12-M-UAAI-242-m01

Module coordinator	Module offered by
holder of the Chair of Business Informatics and AI for Enterprise	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The seminar addresses advanced questions from research and teaching of the Chair for Enterprise AI. This includes both methodological questions from the fields of AI & Data Science and domain-specific questions from the areas of energy, mobility, and smart cities. An overview of the topics can be obtained by visiting the chair's website.

Intended learning outcomes

With the assistance of the chair, students learn to tackle a question according to scientific standards at a Master's level and to communicate the results in presentations and a written seminar paper.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)

Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Seminar: International Climate Policy			12-M-ICP-242-m01

Module coordinator	Module offered by
holder of the Junior Professorship of Quantitative International and Environmental Economics	Faculty of Management and Economics

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

In this seminar, we study international climate policy in a globalized world. We identify threats to the effectiveness of international climate policy initiatives such as the Paris Agreement or the EU Emission Trading Scheme, learn how climate policy, international trade, and trade policy interact and which measures can be taken to avoid free-riding or the relocation of emission-intensive industries. The course will cover recent theoretical and quantitative research papers in this area and students will reproduce the arguments and critically assess the insights from these state-of-the-art contributions in the literature.

Intended learning outcomes

- knowledge of key challenges of climate policy in a globalized world
- reading and understanding state-of-the art research articles
- reproducing key theoretic and econometric arguments of research articles
- contextualization and critical assessment of research articles

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

term paper (20 to 25 pages) and presentation (approx. 20 minutes), weighted 2:1
Language of assessment: English

Allocation of places

10 places.
WA1:
(1) Should the number of applications exceed the number of available places, places will be allocated by lot among all applicants irrespective of their subjects. (2) Places on all courses of the module with a restricted number of places will be allocated in the same procedure. (3) A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Management (2024)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) International Economic Policy (2024)

Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Information Systems (2025)
Master's degree (1 major) International Economic Policy (2025)
Master's degree (1 major) Management (2025)
Master's degree (1 major) China Business and Economics (2025)
Master's degree (1 major) China Language and Economy (2025)
Master's degree (1 major) Economathematics (2025)

Thesis

(30 ECTS credits)

Module title			Abbreviation
Master Thesis Information Systems			12-WI-MA-192-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Business Management and Economics		Faculty of Management and Economics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
30	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Students will complete their degree with a Master's thesis in which they will be required to independently research and write on a topic in the area of business management and economics, drawing on the subject-specific knowledge they have acquired and adhering to the principles of good scientific practice. This thesis may either take the form of an analysis and structured presentation of the existing literature on a certain topic or may, as is often the case, also include a presentation of the students' own original achievements, e. g. new algorithms developed by students, surveys, the prototypical demonstration of a concept they developed or the application and (further) development of a theoretical model.

Intended learning outcomes

In the master thesis students prove that they can plan and carry out a science-based work to solve a particular problem within a specified period autonomously and to document the results in accordance with the professional scientific standards in writing. Students are able to understand relevant contributions to research and professional practice, critically analyze and assess the relevance to their own specific questions. They can assess and recognize major lines of development and dynamics of the subject and therefore also the need to retrain continuously.

Courses (type, number of weekly contact hours, language — if other than German)

No courses assigned to module

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

Master's thesis (approx. 60 to 80 pages)
Language of assessment: German and/or English

Allocation of places

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Additional information

Time to complete: 6 months

Workload

900 h

Teaching cycle

Teaching cycle: each semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Information Systems (2019)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Information Systems (2024)
Master's degree (1 major) Information Systems (2025)