Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Module Catalogue

for the Subject

Economathematics

as a Master's with 1 major

with the degree "Master of Science"

(120 ECTS credits)

Examination regulations version: 2026
Responsible: Faculty of Mathematics and Computer Science
Responsible: Institute of Mathematics
Responsible: Faculty of Management and Economics

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Learning Outcomes

German contents and learning outcome available but not translated yet.

Wissenschaftliche Befähigung

- Die Absolventinnen und Absolventen sind geschult in analytischem Denken, besitzen ein stark ausgeprägtes Abstraktionsvermögen, universell einsetzbare Problemlösungskompetenz und die Fähigkeit, komplexe ökonomische Zusammenhänge zu strukturieren.
- Die Absolventinnen und Absolventen sind in der Lage, sich selbständig mithilfe von Fachliteratur in aktuelle Forschungsgebiete der Mathematik und Wirtschaftswissenschaften einzuarbeiten.
- Die Absolventinnen und Absolventen sind in der Lage, ihre Kenntnisse, Ideen und Problemlösungen zu komplexen Sachverhalten einem Fachpublikum gegenüber verständlich zu präsentieren.
- Die Absolventinnen und Absolventen besitzen die für selbstständiges wissenschaftliches Arbeiten, insbesondere für ein Promotionsstudium erforderlichen Fachkenntnisse, Denk- und Arbeitsweisen und Methodenkenntnisse.
- Die Absolventinnen und Absolventen kennen die Regeln guter wissenschaftlicher Praxis und sind in der Lage, sie bei umfangreichen Arbeiten zu beachten.
- Die Absolventinnen und Absolventen besitzen weiterführende Kenntnisse aktueller Gebiete der Mathematik und Wirtschaftswissenschaften und können sicher mit fortgeschrittenen Methoden dieser Gebiete umgehen.
- Die Absolventinnen und Absolventen besitzen vertiefte Kenntnisse und Überblick über die aktuelle Forschung in mindestens einem Teilgebiet der Mathematik sowie zwei Teilgebieten der Wirtschaftswissenschaften.
- Die Absolventinnen und Absolventen können in aktuellen Gebieten der Wirtschaftswissenschaften mathematische Methoden zur Anwendung bringen.

Befähigung zur Aufnahme einer Erwerbstätigkeit

- Die Absolventinnen und Absolventen sind geschult in analytischem Denken, besitzen ein stark ausgeprägtes Abstraktionsvermögen, universell einsetzbare Problemlösungskompetenz und die Fähigkeit, komplexe ökonomische Zusammenhänge zu strukturieren.
- Die Absolventinnen und Absolventen sind in der Lage, ihre Kenntnisse, Ideen und Problemlösungen zielgruppenorientiert verständlich zu formulieren und zu präsentieren.
- Die Absolventinnen und Absolventen sind in der Lage, komplexe volks- und betriebswirtschaftliche Probleme zu erkennen, strukturieren und modellieren, mit mathematischen Methoden Lösungswege zu entwickeln und diese Ergebnisse zu interpretieren und bewerten.
- Die Absolventinnen und Absolventen besitzen ein ausgeprägtes Durchhaltevermögen bei der Lösung komplexer Probleme innerhalb eines vorgegeben Zeitrahmens.
- Die Absolventinnen und Absolventen sind in der Lage, konstruktiv und zielorientiert mit hoher Team- und Kommunikationsfähigkeit in Gruppen zu arbeiten und hierbei Verantwortung zu tragen.
- Die Absolventinnen und Absolventen sind in der Lage, sich neue Wissensgebiete und aktuelle Entwicklungen selbständig, effizient und systematisch zu erschließen.
- Die Absolventinnen und Absolventen besitzen die Fähigkeit, Projekte in interdisziplinär zusammengesetzten Teams im Bereich der Mathematik und Wirtschaftswissenschaften verantwortlich mitzugestalten.

Persönlichkeitsentwicklung

- Die Absolventinnen und Absolventen sind geschult in analytischem Denken, besitzen ein stark ausgeprägtes Abstraktionsvermögen, universell einsetzbare Problemlösungskompetenz und die Fähigkeit, komplexe ökonomische Zusammenhänge zu strukturieren.

- Die Absolventinnen und Absolventen sind in der Lage, in partizipativen Prozessen gestaltend mitzuwirken.
- Die Absolventinnen und Absolventen besitzen ein ausgeprägtes Durchhaltevermögen bei der Lösung komplexer Probleme innerhalb eines vorgegeben Zeitrahmens.
- Die Absolventinnen und Absolventen sind in der Lage, komplexe Ideen und Lösungsvorschläge allgemeinverständlich zu formulieren und professionell zu präsentieren.

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)):

??-???-2025 (2025-??)

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 Electives Mathematics

(40 ECTS credits)

Module Group Applied Mathematics

(ECTS credits)

Module title	Abbreviation
Applied Analysis	10-M=AAAN-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

In-depth study of functional analysis and operator theory, Sobolev spaces and partial differential equations, theory of Hilbert spaces and Fourier analysis, spectral theory and quantum mechanics, numerical methods (in particular FEM methods), principles of functional analysis, function spaces, embedding theorems, compactness, theory of elliptic, parabolic and hyperbolic partial differential equations with methods from functional analysis.

Recommended previous knowledge:
Familiarity with the contents of the module "Functional Analysis" is strongly recommended.

Intended learning outcomes

The student is acquainted with the fundamental notions, methods and results of higher analysis. He/She is able to establish a connection between his/her acquired skills and other branches of mathematics and questions in physics and other natural and engineering sciences.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Physics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (2019)
Master's degree (1 major) Physics (2020)
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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Numeric of Large Systems of Equations	10-M=ANGG-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Discretisation of elliptic differential equations, classical iteration methods, preconditioners, multigrid methods.

Recommended previous knowledge:
Basic knowledge of numerical mathematics, such as that acquired in the modules "Numerical Mathematics 1" and "Numerical Mathematics 2", is required. Knowledge of the contents of the module "Basics in Optimization" is also recommended.

Intended learning outcomes

The student is acquainted with the most important methods for solving large systems of equations, and knows the most efficient way to solve a given system of equations.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

--

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

--

Module appears in

Master's degree (1 major) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Basics in Optimization			10-M=AOPT-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Fundamental methods and techniques in continuous optimization, unrestricted optimization, conditions for optimality, restricted optimization, examples and applications in natural and engineering sciences as well as economics.

Intended learning outcomes

The student knows the fundamental methods of continous optimization, can judge their strengths and weaknesses and can decide which method is the most suitable in applications.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

--

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

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Module appears in

Master's degree (1 major) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Mathematical Control Theory			10-M=ARTH-242-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Introduction to mathematical systems theory: stability, controllability and observability, state feedback and stability, basics in optimal control.

Recommended previous knowledge:
Basic knowledge of the contents of the module "Ordinary Differential Equations" is useful.

Intended learning outcomes

The student is acquainted with the fundamental notions and methods of control theory. He/She is able to establish a connection between these results and broader theories, and learns about the interactions of geometry and other fields of mathematics.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

--

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

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Module appears in

Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Bachelor's degree (1 major) Aerospace Computer Science (2025)

Module title	Abbreviation
Numeric of Partial Differential Equations	10-M=VNPE-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Types of partial differential equations, qualitative properties, finite differences, finite elements, error estimates (numerical methods for elliptic, parabolic and hyperbolic partial differential equations; finite elements method, discontinuous Gelerkin finite elements method, finite differences and finite volume methods).

Recommended previous knowledge:
We recommend basic knowledge of functional analysis and partial differential equations, such as can be acquired in the modules "Introduction to Functional Analysis" and "Applied Analysis".

Intended learning outcomes

The student is acquainted with advanced methods for discretising partial differential equations.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Physics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (2019)
Master's degree (1 major) Physics (2020)
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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Selected Topics in Optimization			10-M=VOPT-161-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Selected topics in optimization, e. g. inner point methods, semidefinite programs, non-smooth optimization, game theory, optimization with differential equations.

Intended learning outcomes

The student is acquainted with advanced methods in continuous optimization. He gains the ability to work on contemporary research questions in continuous optimization.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

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

--

Module appears in

Master's degree (1 major) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Discrete Mathematics	10-M=VDIM-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Advanced methods and results in a selected field of discrete mathematics (e. g. coding theory, cryptography, graph theory or combinatorics)

Recommended previous knowledge:
Basic knowledge of the contents of the module "Introduction to Discrete Mathematics" is required.

Intended learning outcomes

The student is acquainted with advanced results in a selected topic in discrete mathematics.

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

V (3) + Ü (1)
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, usually chosen) or
b) oral examination of one candidate each (approx. 15 minutes) or
c) oral examination in groups (groups of 2, approx. 10 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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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) Mathematics (2016)
Master's degree (1 major) Physics (2016)
Master's degree (1 major) Nanostructure Technology (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Mathematics (2019)
Master's degree (1 major) Nanostructure Technology (2020)

Master's degree (1 major) Physics (2020)
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) Mathematical Physics (2020)
Master's degree (1 major) Quantum Technology (2021)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Dynamical Systems	10-M=VDSY-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Fundamentals of dynamical systems, e. g. stability theory, ergodic theory, Hamiltonian systems.

Recommended previous knowledge:
Basic knowledge of the contents of the module "Ordinary Differential Equations" is useful.

Intended learning outcomes

The student masters the mathematical methods in the theory of dynamic systems, and is able to analyse their quality.

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

V (3) + Ü (1)
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, usually chosen) or
b) oral examination of one candidate each (approx. 15 minutes) or
c) oral examination in groups (groups of 2, approx. 10 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus

Allocation of places

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Additional information

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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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Selected Topics in Mathematical Control Theory			10-M=VTRT-242-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Selected topics in linear and non-linear control theory, e. g. networked linear control systems, controllability of bilinear systems.

Recommended previous knowledge:
Knowledge of the contents of the module "Mathematical Control Theory" or "Control Theory" is required.

Intended learning outcomes

The student gains insight into contemporary research problems in control theory. He/She masters advanced techniques in this field and can apply them to complex problems.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Inverse Problems 1	10-M=VIPR-222-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Linear operator equations, ill-posed problems, regularisation theory, Tikhonov regularisation, iterative regularisation methods, examples of ill-posed problems.

Recommended previous knowledge:
Basic knowledge of functional analysis, such as that taught in the module "Functional Analysis", is recommended.

Intended learning outcomes

The student can judge whether a given problem is well posed or ill posed. He/She can apply regularisation methods and examine them regarding stability and convergence, and is familiar with selected inverse problems.

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

V (3) + Ü (1)
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, usually chosen) or
b) oral examination of one candidate each (approx. 15 minutes) or
c) oral examination in groups (groups of 2, approx. 10 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus

Allocation of places

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Additional information

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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) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Inverse Problems 2	10-M=VIP2-222-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	undergraduate	--

Contents

Variational regularisation methods, source conditions, non-linear operator equations.

Recommended previous knowledge:
Basic knowledge of functional analysis, such as that taught in the module "Functional Analysis", is recommended, as well as the contents of the module "Inverse Problems 1" if applicable.

Intended learning outcomes

The students understand the particular difficulties of nonlinear problems and know solution methods for those. They have the ability to apply variational regularisation methods and to examine them with respect to stability and convergence. They gain deeper knowledge in selected inverse problems.

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

V (3) + Ü (1)
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, usually chosen) or
b) oral examination of one candidate each (approx. 15 minutes) or
c) oral examination in groups (groups of 2, approx. 10 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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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) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Non-linear Analysis	10-M=VNAN-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Methods in nonlinear analysis (e. g. topological methods, monotony and variational methods) with applications.

Recommended previous knowledge:
We recommend basic knowledge of functional analysis and partial differential equations, such as can be acquired in the modules "Introduction to Functional Analysis" and "Applied Analysis".

Intended learning outcomes

The student is acquainted with the concepts of non-linear analysis, can compare them and assess their applicability on practical problems.

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

V (3) + Ü (1)
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, usually chosen) or
b) oral examination of one candidate each (approx. 15 minutes) or
c) oral examination in groups (groups of 2, approx. 10 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Optimal Control	10-M=VOST-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Basics in optimal control of ordinary and partial differential equations, theory of optimal control, conditions for optimality, methods for numerical solution.

Recommended previous knowledge:
We recommend basic knowledge of functional analysis and ordinary differential equations, such as can be acquired in the modules "Introduction to Functional Analysis" and "Ordinary Differential Equations". Knowledge of the contents of the module "Basics in Optimization" may also be useful.

Intended learning outcomes

The student is acquainted with advanced methods in optimal control. He gains the ability to work on contemporary research questions in continuous optimization.

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

V (3) + Ü (1)
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, usually chosen) or
b) oral examination of one candidate each (approx. 15 minutes) or
c) oral examination in groups (groups of 2, approx. 10 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Learning by Teaching 1			10-M=ELT1-192-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Supervising a tutorial or study group in the Bachelor's programme under guidance of the respective lecturer.

Intended learning outcomes

The student gains his/her first experience in teaching university mathematics. He/She knows basic didactical methods and can apply them in practical situations.

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

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)

Assessment of tutoring activities by supervising lecturers or exercise supervisors (1 to 2 teaching units)

Allocation of places

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Additional information

Application and selection with the teaching coordinator for mathematics

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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (2019)
Master's degree (1 major) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Selected Topics in Business Mathematics			10-M=ATWM-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Contemporary topics in mathematics for economics, for example in the field of statistics, finance or insurance mathematics.

Recommended previous knowledge:
Depending on the content, basic and advanced knowledge from different areas of statistics or stochastics is required. In case of doubt, it is recommended to consult the lecturer.

Intended learning outcomes

The student is acquainted with fundamental concepts and methods in a contemporary field of mathematics for economics, and is able to apply these skills to complex questions.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Economathematics (2016)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Selected Topics in Numerical and Applied Mathematics			10-M=VNAM-192-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

In-depth discussion of a specialised topic in numerical or applied mathematics taking into account recent developments and interrelations with other mathematical concepts.

Recommended previous knowledge:
Depending on the content, basic and advanced knowledge from different areas of applied mathematics is required. In case of doubt, it is recommended to consult the lecturer.

Intended learning outcomes

The student is acquainted with advanced results in a selected topic in numerical or applied mathematics, and is able to apply these to complex problems.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Mathematical Data Science and Machine Learning			10-M=AMML-252-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Statistical learning theory, in particular PAC Learning, Rademacher complexity und VC-dimension. Theoretical analysis of learning paradigms such as ensemble methods, online learning, SVMs or kernel methods.

Recommended previous knowledge:
Familiarity with the contents of the modules „Stochastics 1" and „Introduction to Functional Analysis" is desireable.

Intended learning outcomes

The students are familiar with the basic notions of statistical learning theory and are able to apply them to different learning paradigms. They are able to deal with current research questions in the theory of machine learning.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Mathematics (2019)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Advanced Topics in Mathematics of Machine Learning	10-M=VMML-252-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

In-depth mathematical treatment of a special topic in the field of machine learning, taking into account current developments and cross-connections to other mathematical concepts.

Recommended previous knowledge:
Depending on the content, basic and advanced knowledge from different areas of applied mathematics is required. In case of doubt, consultation with the lecturer is recommended.

Intended learning outcomes

Students have in-depth knowledge of a selected sub-area of machine learning and are able to apply this knowledge to complex problems.

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

V (3) + Ü (1)
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, usually chosen) or
b) oral examination of one candidate each (approx. 15 minutes) or
c) oral examination in groups (groups of 2, 10 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus

Allocation of places

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Additional information

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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) Mathematics (2016)
Master's degree (1 major) Mathematics (2019)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module Group Stochastics and Statistics

(ECTS credits)

Module title			Abbreviation
Industrial Statistics 1			10-M=AIST-161-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Theory of parameter and domain estimates, tests for statistical estimates, distribution models, empirical distribution analysis, comparative analysis, statistical product testing, survey sampling, audit sampling.

Intended learning outcomes

The student masters the fundamental statistical methods for industrial applications.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)

Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Economathematics (2025)

Module title	Abbreviation
Stochastical Processes	10-M=ASTP-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Markov chains, queues, stochastic processes in C[0,1], Brownian motion, Donsker's theorem, projective limits.

Recommended previous knowledge:
Basic knowledge of stochastics is required, such as that acquired in the "Stochastics 1" module. Knowledge of the contents of the module "Stochastics 2" is also recommended.

Intended learning outcomes

The student is acquainted with the fundamental notions and methods of stochastical processes and can apply them to practical problems.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Time Series Analysis	10-M=AZRA-212-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Additive model, linear filters, autocorrelation, moving average, autoregressive processes, Box-Jenkins method.

Recommended previous knowledge:
Basic knowledge of stochastics is required, such as that acquired in the "Stochastics 1" module. Knowledge of the contents of the module "Stochastics 2" is also recommended.

Intended learning outcomes

The student is acquainted with the fundamental methods of time series analysis and can apply them to practical problems.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: in the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Industrial Statistics 2			10-M=VIST-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Linear models, regression analysis, nonlinear regression, experimental design, basics in time series modelling, basics in empirical time series analysis, methods of exponential smoothing, predictions and prediction domains, statistical process monitoring.

Intended learning outcomes

The student masters advanced statistical methods for industrial applications.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Economathematics (2025)

Module title	Abbreviation
Mathematical Statistics	10-M=VSTA-212-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Contingency tables, categorical regression, one-factorial variance analysis, two-factorial variance analysis, discriminant function analysis, cluster analysis, principal component analysis, factor analysis.

Recommended previous knowledge:
Basic knowledge of stochastics is required, such as that acquired in the "Stochastics 1" module. Knowledge of the contents of the module "Stochastics 2" is also recommended.

Intended learning outcomes

The student is acquainted with the fundamental methods in statistical analysis and can apply them to practical problems.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Selected Topics in Stochastics			10-M=VATS-242-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Selected topics in stochastics.

Recommended previous knowledge:
Basic knowledge of stochastics is required, such as that acquired in the "Stochastics 1" module. Knowledge of the contents of the module "Stochastics 2" is also recommended.

Intended learning outcomes

The student gains insight into contemporary research problems in stochastics. He/She masters advanced techniques in this field and can apply them to complex problems.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Economathematics (2024)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Markov Processes	10-M=VMPR-242-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Markov processes form a central class of stochastic processes and represent the fundamental language for modeling complex, high-dimensional, and interacting systems. This course systematically develops the theory of Markov processes and highlights their important role in application areas such as machine learning (ML), statistical physics, the life sciences, and financial modeling. The methods covered are of central importance both for pure mathematics and for data-driven applications. The fundamental concepts and core methods are developed using discrete-time Markov chains. Topics include: Long-term behavior and stationary distributions Ergodicity and time reversal Mixing times and convergence analysis Spectral properties of the associated operators Scaling limits as a transition to continuous processes Building on these foundations, time- and space-continuous Markov processes are introduced. Algorithmic and statistical applications: High-dimensional dynamics: Interacting particle systems, Gibbs-Markov fields, Networks Stochastic algorithms: Design and convergence analysis with applications in optimization and ML Sampling methods: Techniques for drawing samples from complex distributions, Markov Chain Monte Carlo methods (MCMC) Generative models: Applications in data analysis and ML Recommended prerequisites: Basic knowledge of probability theory is assumed, such as that acquired in the course "Stochastics 1." Familiarity with the content of "Stochastics 2" is also recommended.

Intended learning outcomes

Students master the theoretical foundations of Markov processes and can apply them to the modeling and analysis of stochastic systems

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Mathematics (2019)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Research in Groups - Statistics			10-M=GSTA-161-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Selected modern topics in statistics.

Recommended previous knowledge:
Basic knowledge of stochastics is required, such as that acquired in the "Stochastics 1" module. Knowledge of the contents of the module "Stochastics 2" is also recommended. Depending on the content of the course, other prior knowledge may also be helpful; consultation with the lecturer is recommended.

Intended learning outcomes

The student gains insight into contemporary research problems in statistics. He/She masters advanced techniques in this field and can apply them to complex problems.

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

V (2) + 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Mathematics (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) Mathematical Physics (2020)

Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module Group Financial and Insurance Mathematics

(ECTS credits)

Module title	Abbreviation
Stochastic Models of Risk Management	10-M=ASMR-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Measure theory, risk diagrams, failure mode and effects analysis, risk assessment in auditing, shortfall measures, value at risk, conditional value at risk, axiomatic of risk measures, modelling of interdependencies, copula, modelling of functional interrelations, regression models, basics in time series modelling, aggregated losses, estimates of shortfall measures, estimates of value at risk and conditional value at risk, basics in empirical time series analysis, methods of exponential smoothing, predictions and prediction domains, estimates of value at risk in time series, elementary empirical regression analysis, simulation methods.

Intended learning outcomes

The student is acquainted with the fundamental methods of stochastic risk analysis.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Insurance Mathematics 1	10-M=AVSM-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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 discusses policies on one life: distributions of future lifetime, life tables, life table approximations, types of benefits, present value, expection principle, premium calculation, commutation functions, reserves and policy values, expenses, bonus, recursive methods, Thiele's differential equation.

Recommended previous knowledge:
Depending on the content, basic and advanced knowledge from different areas of statistics or stochastics is required. In case of doubt, it is recommended to consult the lecturer.

Intended learning outcomes

The student is acquainted with the fundamental notions and methods of life insurance mathematics and can apply them to practical problems.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Economathematics (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) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (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) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Selected Topics in Financial Mathematics	10-M=VFNM-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Selected topics in financial mathematics, e. g. conditional expectation and martingales, fundamental theorem of asset pricing in discrete time for finite spaces, American put, Snell envelope, stopping time, optimal stopping, stochastic integration, stochastic differential equations and Ito calculus, Black-Merton-Scholes model.

Recommended previous knowledge:
Familiarity with the contents of the modules "Introduction to Stochastic Financial Mathematics" and "Stochastics 1" is strongly recommended.

Intended learning outcomes

The student is acquainted with advanced results in financial mathematics. He/She gains the ability to work on contemporary research questions in financial mathematics and can apply his/her skills to complex problems.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Economathematics (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) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (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) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Insurance Mathematics 2	10-M=VVSM-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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 discusses modern valuation approaches and multiple decrement models regarding one life or two lives: modern valuation in life insurance mathematics, axiomatic derivation of the product measure approach, Markov chain models, Kolmogorov's differential equations, Thiele's differential equations, numerical applications, joint life policies.

Recommended previous knowledge:
Familiarity with the contents of the modules "Insurance Mathematics 1" and "Selected Topics in Financial Mathematics" is strongly recommended.

Intended learning outcomes

The student is acquainted with advanced methods in insurance mathematics. He gains the ability to work on contemporary research questions in insurance mathematics and can apply his/her skills to complex problems.

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

V (4) + 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. 90 to 120 minutes, usually chosen) or
b) oral examination of one candidate each (approx. 20 minutes) or
c) oral examination in groups (groups of 2, 15 minutes per candidate)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester
creditable for bonus

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Economathematics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Economathematics (2025)

Compulsory Electives Business Management and Economics

(40 ECTS credits)

Two focuses with 40 ECTS credits

Marketing

(20 ECTS credits)

Core

(10 ECTS credits)

Module title	Abbreviation
Sales and Communications Management	12-M-IMM-262-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

This course provides students with a comprehensive understanding of sales strategies and communication techniques that are essential for success in today's dynamic business environment. By looking at sales management, including the design of sales structures, strategic management and human resource management, as well as communication management, which includes traditional and digital means of communication, students will gain a comprehensive overview of the relevant subject areas.

Rough course structure:
- Sales management:
- Designing the sales structure
- Strategic sales management
- Management of sales staff
- Communication management:
- Traditional communication tools (e.g. TV, flyers)
- Digital communication tools (e.g. social media marketing; search engine marketing, display advertising)
- Systematic channel integration

Intended learning outcomes

Through theoretical understanding and practical application, students will develop proficiency in strategic and operational sales management and the utilization of diverse communication instruments to achieve organizational objectives and maximize market impact.

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title	Abbreviation
Marketing Research	12-M-SM-262-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

This course provides students with a comprehensive understanding of the principles and processes of conducting effective marketing research. This includes, for example, understanding latent constructs, designing data collection methods and questionnaires, and setting up experiments. In addition, students will learn techniques for data analysis and interpretation using SPSS, covering univariate, bivariate and multivariate analysis methods to derive actionable insights from the research results.

Rough course structure:
- Basics and process of marketing research
- Introduction to marketing research
- Latent constructs
- Data collection & questionnaire design
- Experimental set-up

Data analysis and interpretation
- Introduction to SPSS
- Univariate and bivariate analysis methods
- Multivariate analysis methods (various forms of regression analysis; analysis of variance; conjoint analysis; mediation analysis; structural equation modeling)

Intended learning outcomes

Through theoretical considerations as well as practical exercises and case studies, students develop the necessary skills to collect and analyze data in order to make strategic marketing 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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Strategic Managerial Accounting			12-M-INST-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Coordination, Budgeting and Incentives in Organizations			12-M-KOBO-262-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

This module focuses on accounting-based instruments to control behavior in decentralized enterprises. The course first discusses the role of accounting in the context of decision-making and behavioral controlling as well as informational analyses. Afterwards, the most common instruments of behavioral controlling (budgeting, value-oriented management, transfer prices) are discussed with regard to theory and practice.

Intended learning outcomes

Initially, students acquire an understanding of the necessity of behavioral control in enterprises. Upon completion of the course, they are able to analyze and evaluate requirements and effects of instruments used for behavioral control. Additionally, they develop competences for deployment, structure and development of coordination tools.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Business Software 1: Management and Implementation of Information Systems			12-M-GPU-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: German and/or English
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Digital Strategy			12-M-IBS-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
E-Commerce			12-M-EC1-262-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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title	Abbreviation
Product Innovation and Price Management	12-M-PIPM-262-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

"Product Innovation and Price Management" explores the crucial aspects of developing innovative products and effectively managing pricing strategies in dynamic markets. Students will examine theories and practices related to product innovation, market analysis, and pricing methodologies.

Rough course structure:

Innovation management
- Fundamentals of innovation management
- Idea generation & idea concretization
- Concept definition
- Concept evaluation and selection
- Market launch of new products
- Cross-phase approaches to managing the innovation process

Price management

- Basics of price management
- Concepts of classical price theory
- Behavioral basics of pricing policy
- Approaches to price determination (demand-oriented, cost-oriented, competition-oriented)

Intended learning outcomes

The goal of this course is to equip students with the knowledge and skills necessary to drive innovation in product development and effectively manage pricing strategies in dynamic markets.

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Marketing Analytics			12-M-MA-262-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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Marketing			12-M-TM-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Logistics and Supply Chain Management

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Advanced Operations & Logistics Management			12-M-AOLM-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Global Logistics & Supply Chain Management			12-M-GLSC-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Strategic Management of Global Supply Chains			12-M-SMGS-262-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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Seminar: Supply Chain Competition			12-M-SCC-262-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

In the seminar "Supply Chain Competition", students participate in an online multi-round simulation and apply methods of operations and supply chain management.

Intended learning outcomes

After completing this seminar students

i. selected and applied quantitative models for procurement, production, sales and supply chain management,
ii. faced the practical problems when using real data to feed models,
iii. and understand the challenges to reach a coordinated decision in a company.

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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: English
Assessment offered: Once a year, winter semester
creditable for bonus

Allocation of places

Number of places: 12.
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 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: each semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Decision Support Systems			12-M-DSS-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Enterprise AI			12-M-EAI-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Optimization in Practice			12-M-OIP-262-m01
Module coordinator		**Module offered by**	
--		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	--	--	

Contents

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Intended learning outcomes

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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) portfolio (approx. 50 hours total)
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

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

--

Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Logistics and Supply Chain Management			12-M-TLSCM-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Human Resource Management and Organization

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Incentives in Organizations			12-M-AO-262-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

Based on the classical principal-agent theory, this course discusses methodological and empirical aspects of incentives in organisations. It uses contents from advanced text books and original (mainly empirical) research articles.

Outline of syllabus
1. Principal-agent theory
2. Do top managers earn too much? (application)
3. Performance-based payment
4. Implementation of performance-based payment in companies (application)
5. Seniority payment (with application)
6. Financial incentives to work after retirement (with application)
7. Wage bargaining (with application)
8. Efficiency wages (with case study)
9. Team incentives (with case study)

Literature
Milgrom and Roberts (1992), Economics, Organisation and Management, London.
Mishel and Sabadish (2013), CEO Pay in 2012 was extraordinarily high, EPI Issue Brief 367, Washington DC.
Fabbri and Marin (2016), What Explains the Rise in CEO Pay in Germany? A Panel Data Analysis for 1977-2009, Scandinavian Journal of Economics 118(2),235-263.Lazear (2000), Performance Pay and Productivity, American Economic Review 90, 1346-1361.
Lazear (1979), Why is there mandatoryretirement? Journal of Political Economy 87, 1261-1284. Hutchens (1989), Seniority, Wages and Productivity: A Turbulent Decade, Journal of Economic Perspectives 3 (4), 49-64.
Zwick (2011), ConsequencesofSeniorityWages on theEmploymentStructure, Industrial and Labor Relations Review 65(1), 108-125.
Lorenz and Zwick (2021), Money also issunny in a retiree´s world-financial incentives and work after retirement, Journal for Labour Market Research, 55 (21).
Bartolucci (2012), Credible Threats in a Wage Bargaining Model with on-the-job Search, Economic Letters, 117(3), 657-659.
Lukesch and Zwick (2023) Do outside options drive wage inequalities in retained jobs? Evidence from a natural experiment, British Journal of Industrial Relations, published online, https://doi.org/10.1111/bjir.12771.
Salop (1979), The model of the natural rate of unemployment, American Economic Review 69, 117–125.
Becker and Stigler (1974), Law enforcement, Malfeasance, andtheCompensationofEnforcers, Journal of Legal Studies III, 1-18.
Garibaldi (2006), Personnel Economics in Imperfect Labour Markets, Oxford University Press, Chapter 13.
Hjort (2014), Ethnic Divisions and Production in Firms, QuarterlyJournal of Economics, 1899-1946.
Kandel and Lazear (1992), Peer Pressure and Partnerships, Journal of Political Economy 100(4), 801817.

Intended learning outcomes

Students acquire a working knowledge of key incentive models models, selected empirical applications and the necessary econometric background. This enables them to identify the advantages and disadvantages of different incentive systems that are applied in the enterprise context, to make informed management analyses and to critically evaluate current controversies and developments as well as to conduct their own research.

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) portfolio (approx. 50 hours total) Language of assessment: English creditable for bonus
Allocation of places
--
Additional information
--
Workload
150 h
Teaching cycle
Teaching cycle: winter semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
--
Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Human Resource Management and Industrial Relations			12-M-HRM-262-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 to 120 minutes) or b) portfolio (approx. 50 hours total) Language of assessment: English creditable for bonus
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)
--
Module appears in
keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Empirical HR Research with Stata			12-M-EPF-262-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 seminar "Empirische Personalforschung" ("Empirical HR Research with STATA") introduces and discusses the most important estimation problems and their application in the software package STATA. In addition, students learn, with the help of basic problems of personnel economics, how estimation programs are programmed in STATA.
Reading list to be provided in class.

Intended learning outcomes

The aim of the seminar is to enable students to understand and apply the most important estimation programmes and their application in STATA with a focus on problems in personnel economics.

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

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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: 12.
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: each semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Corporate Entrepreneurship and Innovation			12-M-UGF1-262-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) portfolio (approx. 50 hours total)
Language of assessment: English
creditable for bonus

Allocation of places
--
Additional information
--
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Coordination, Budgeting and Incentives in Organizations			12-M-KOBO-262-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

This module focuses on accounting-based instruments to control behavior in decentralized enterprises. The course first discusses the role of accounting in the context of decision-making and behavioral controlling as well as informational analyses. Afterwards, the most common instruments of behavioral controlling (budgeting, value-oriented management, transfer prices) are discussed with regard to theory and practice.

Intended learning outcomes

Initially, students acquire an understanding of the necessity of behavioral control in enterprises. Upon completion of the course, they are able to analyze and evaluate requirements and effects of instruments used for behavioral control. Additionally, they develop competences for deployment, structure and development of coordination tools.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

--

Additional information

--

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

keinem Studiengang zugeordnet

Module title	Abbreviation
Contract Theory	12-M-CT-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

During the 1960/70s, microeconomic theory came to acknowledge that many (if not most) economic transactions are characterized by asymmetric distribution of information – i.e., at least one of the parties participating in a transaction usually is privy to information that the remaining parties do not have access to. This asymmetric distribution of information subsequently was recognized to be a major impediment for transactions to be economically efficient. Contract theory addresses the question how the inefficiencies arising from asymmetric distribution of information can best be mitigated by appropriate design of the contractual (or, more generally, institutional) framework that governs the transaction under consideration. This lecture covers the baseline models of "moral hazard" (i.e., situations where one party has private knowledge after a contract has been signed) and "adverse selection" (i.e., situations where one party has private knowledge before a contract is signed). As applications we will address questions discussed in organizational, personnel or industrial economics, such as incentive design within organizations or the design of labor law regulations and competition laws.

Even though we will work with precise mathematical formalizations of the ideas that we want to think and talk about, this course requires little more than a solid understanding of basic differential calculus. More important than having a solid mathematical background is having a strong interest in formal economic analysis and fun with logical thinking and puzzle solving.

The exposition is primarily based on the following textbook: Laffont and Martimort (2002): "The Theory of Incentives"

Intended learning outcomes

After completing the course students will be able to
- explain essential findings of contract theory,
- apply the involved methods to given stylized examples on their own,
- interpret the properties of real-life contracts as the outcome of the interaction between two or more contracting parties in the presence of asymmetric information,
- evaluate government interventions with regard to their effect on the efficiency properties of the interaction between the contracting parties.

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Employment Law			12-M-AFW-262-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**	
2 semester	graduate	--	

Contents

Contents: employment and labour law and works constitution law incl. collective agreement law

Employment and Labour law

Legal sources of employment and labour law

Definitions, employment and labour law, employees

The employment contract

- Job application, permissible and impermissible questions in job interviews, consequences of lying, contesting the employment contract
- General Equal Treatment Act, claims for damages by applicants
- Conclusion of an employment contract, form, evidence under the Law of Proof of Substantial Conditions Applicable to the Employment Relationship
- Contents of the employment contract, company practice, overall commitment, reservation of the right of voluntariness and revocation
- General terms and conditions of business and control of terms and conditions of employment, invalid clauses and their consequences
- Limitation of the term of the employment contract, fixed term employment contracts

Rights and duties arising from the employment relationship

- Primary and secondary duties
- Employer's right to issue instructions, permissible and impermissible instructions
- Sickness, obligations to report and provide evidence under the Continued Remuneration Act
- Secondary employment, prohibition of competition, duty of confidentiality, occupational health and safety
- Granting of holiday leave
- Continued payment of wages in the event of illness, restrictions

Severe disability, special rights and protection against dismissal

Working hours and the Working Hours Act

The warning, formal and material requirements, consequences

Termination of employment

- Termination agreement
- Termination of employment
- Formal requirements
- Ordinary and extraordinary termination by the employer
- Behavioral termination
- Person-related (illness-related) dismissal

- Dismissal for operational reasons
- Special protection against dismissal

Works constitution law incl. collective bargaining law

Legal sources of works constitution law

Definitions, company, works council, employee

The works council and its role

- Works council elections
- Start, end, duration of term of office
- Legal status of members, honorary office, leave of absence, special protection against dismissal
- Entitlement for training, works council costs
- Works meetings
- General works council, group works council, youth/apprentice representation

Material co-determination of the works council, participation

- Information rights (access to gross pay roll, expert advice)
- Consultation rights (consultation before each dismissal, right to object)
- Consultation rights (involvement of the economic committee, changes in operations)

Co-determination in the narrower sense

- Rights of consent and objection (staff questionnaire, selection guidelines, recruitment, transfers)
- Refusal of consent, legal proceedings Substitution of consent

Co-determination rights

- Enforceable co-determination, conciliation board, composition, procedure, decision
- Mandatory co-determination rights of works council, e.g. regarding
- Conduct of the workplace (smoking and alcohol bans, formalized sick leave talks, occupational integration management)
- Working hours, breaks, shift and flexi-time models, overtime, short-time work
- Holidays, company holidays
- Technical equipment for monitoring (time recording, access systems, video surveillance, telephone and internet use, skills database)
- Occupational health and safety
- Social facilities (canteen, company kindergarten)
- Company wage structure, remuneration (piece rates, bonuses)
- Company changes, reconciliation of interests and social plan

Collective bargaining law

Definition, contractual and normative part, legal effect

Application of collective agreements, parties of collective agreements

Dynamic and static clauses referring to a collective agreement

Collective agreement and company agreements, blocking effect of collective agreement

Collective arbitration board in cases of compulsory works council co-determination

Intended learning outcomes

At the end of this course, students will have the following competences:

Students gain solid basic knowledge of employment and labour law, the works council and its tasks and an overview of collective agreement law. At the same time, methodically and substantively sound legal knowledge is conveyed and practical relevance is established with case studies and current case law.

By working on an exam in the form of a legal opinion, the students are taught to solve a demanding legal issue with legal problems in a given time. Within a narrow thematic field and a time-limited framework, they are able to work on a legal issue in a well-founded and largely independent manner.

Within the framework of the term paper on a judgement of the Federal Labour Court, the students deal with a concrete case and the case law of the highest German labour court. They are familiarised with the methods of legal work and are enabled to work independently in a problem-solving manner. In addition to understanding the facts of the case and the legal problems, they will focus primarily on the consequences of the judgement for their practice. Here, the legal knowledge imparted will be implemented with a practical approach and the opportunity to creatively develop their own recommendations on how to deal with the judgement. In addition, the students present the case and their own conclusions for practice. In the group discussion, the other students have the opportunity to gather further knowledge and actively participate in the exchange of opinions on current judgements and case law.

The knowledge imparted is relevant for a wide range of professional fields of activity and is especially valuable for students who will work in the field of human resources or are interested in the field of employee management.

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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

25 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

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

keinem Studiengang zugeordnet

Module title			Abbreviation
Organizational Economics and Digital Transformation			12-M-OEDT-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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: after announcement

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

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Experimental Economics			12-M-EE-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Aim and outline of the course:

The Nobel Prizes for Daniel Kahneman and Vernon Smith 2002 and for Richard Thaler 2017 have underlined the increasing importance of experimental methods in economics. Experimental methods are used to collect data using randomization or a highly controlled environment. This course offers an introduction to the methodology of experimental economics and economic laboratory experiments.

In the methodology part it is shown why experiments are a good tool to generate scientific knowledge. Furthermore, widely used techniques in economic experiments are explained and how economic experiments differ from experiments in other social sciences. This part also deals with methods of reasoning, i.e. how inferences can be drawn from evidence that is generated by experiments.

The unifying theme of all laboratory experiments that will be covered is, understanding the behavior of agents, who produce and/or distribute goods by interacting with each other. The first topic is about markets and it includes experiments that shown under which conditions and institutions markets work very efficient and under which conditions and institutions they fail to yield a desirable outcome. The second topic includes experiments that look at the behavior of two agents, who bargain about the distribution of a common pie. On the basis of these results we will discuss experiments that try to explain bargaining behavior and show how agents deviate systematically from the neoclassical framework, i.e. the "homo oeconomicus". The third topic deals with cooperation and institutions that support cooperation in the long run as equilibrium. Further, systematic evidence will be presented on how individuals can be classified in different cooperative types and how these types can explain economic outcomes in natural environments. The forth topic concerns reciprocity, a strong determining factor of human behavior that is nearly universal. We will cover experiments that show how reciprocity can enforce relational contracts in the absence of third party enforcement. Moreover, there will be a special emphasis on how reciprocity affects labor markets.

When time permits up to two additional topics will be covered. The first topic is about gender differences in competitiveness, risk-aversion and overconfidence. The second topic is about the elicitation of social norms.

Prerequisites: Participants should have a basic knowledge about microeconomics, game theory and econometrics.

Literature:

The course will be mainly paper based but the following books provide a good overview and complement the discussed papers.

- Dhami, S. (2016). The Foundations of Behavioral Economic Analysis. Oxford University Press.
- Guala, F. (2005). The Methodology of Experimental Economics. Cambridge University Press

In addition lecture slides will be provided.

Intended learning outcomes

The aim of the course is to familiarize students with the methodology experimental economics. Further, students will be enabled to understand how causal evidence can be obtained using controlled variation and how to generalize from results that are derived in artificial laboratory setting to more natural environments. Moreover, the

course shall deepen students' understanding of human decision making in multi-agent settings and to make them aware of systematic heterogeneous human behavior in the production and distribution of goods.

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) 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

30 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

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

keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Human Resource Management and Organization			12-M-TRMO-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Public Finance

(20 ECTS credits)

Core

(10 ECTS credits)

Module title	Abbreviation
Policy of Taxation	12-M-F1-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Description:
In this module, students will acquire a basic understanding of the tax system and structure applied to households in Germany. In addition, the course will include simple tax incidence analyses of specific tax policies. Reading: lecture notes provided by Chair.

Contents:
1. Fiscal harmonisation system in Germany
2. Mechanics and problems of the VAT system
3. Tax incidence analysis
4. Income tax code
5. Taxation of married couples and families
6. Taxation and household decisions

Intended learning outcomes

After completing the course "Tax Policy" students know the most important tax revenues in Germany and how they are divided between the Federation and the federal provinces. They are able to explain the incidence of specific taxes using simple case studies. Finally they can discuss tax induiced distortions of individual decisions using simple partial equilibrium models.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Social Insurance and the Welfare State			12-M-F3-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Description:
This module discusses the economic justification for implementing social security systems in a market economy and provides students with deeper insights into this topic with the help of specific issues of public health and retirement policy.
Reading: lecture notes provided by Chair.

Contents:
1. Public intervention in insurance markets
2. The insurance function of social security
3. Social security and social morale
4. The optimal health insurance contract
5. Why do we need a public pension system?
6. Funding vs pay-as-you-go financing of public pensions

Intended learning outcomes

After completing the module "Theorie der Sozialversicherung" students are able to explain the theoretical foundation of the social security system in a market economy. Using simple partial equilibrium models they can discuss the financing and contract structure of the public health and pension system. Finally they are able to analyze the consequences of policy reforms.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Optimal Tax Theory			12-M-F4-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Description:
The course will discuss the design of an optimal tax system. First, students will learn what criteria have to be met for a tax system to be optimal. Lectures will introduce key rules for taxing commodities as well as income and capital.
Examining specific taxation issues such as eco-tax, family taxation and the taxation in an uncertain world, students will then gain more in-depth insights into these rules.
Reading: Lecture notes will be provided.

Outline of syllabus:
1. Optimal commodity taxation
2. Optimal income taxation
3. Optimal taxation of families

Intended learning outcomes

After completing this module students have a basic understanding of what is meant with "optimal taxation". They are able to apply this concept to specific normative questions of tax policy in practice. Students also learn to prepare and present short papers, where they discuss specific normative policy issues in groups.

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) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
European Public Finance			12-M-EFP-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The course aims at introducing the main public finance issues in the European Union. Students will learn how the revenues of the Union are generated and how they are spent. We will discuss the motivation and implications of the Brexit decision and various coordination problems with respect to public debt, taxation and environmental policy. Economic policy is discussed with simple models, which highlight the central problems.

Course contents:

1. The European Union: History and Institutions

2. The Budget of the European Union

3. Economic Analysis of the Brexit Process

4. Sovereign Debt, Financial Crisis and Fiscal Integration in the EMU

5. Tax Competition or Tax Coordination in Europe?

6. European Climate Policy: Emission Trading and Green Deal

Intended learning outcomes

After completing the course students are introduced to the central public finance policy issues, institutions and rules of conduct in the EU. They are able to apply simple theoretical models to to discuss and analyze more specific policy 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) portfolio (approx. 50 hours total)
Language of assessment: English
creditable for bonus

Allocation of places

There are no restrictions with regard to available places for students of the Master's degree programmes Business Management, International Economic Policy or Economics, Information Systems, Wirtschaftsmathematik (Mathematics for Economics) and Chinese and Economics as well as China Business and Economics. A total of 20 places will be allocated to students of other subjects; should the number of applications exceed the number of available places, these places will be allocated by lot.

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
keinem Studiengang zugeordnet

Module title	Abbreviation
Advanced Computational Economics	12-M-NGM-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Description:
This course will mostly be concerned with the analysis of public policy (in areas such as taxation, social security etc.). Providing students with state-of-the-art techniques for quantitative macroeconomic research in this very field and familiarising them with the relevant literature, this course will teach students how such policies redistribute between different generations and also within generations, how they may improve risk sharing when markets are incomplete and how they can trigger distortions and therefore hurt the aggregate economy.

Outline of syllabus:
1. Programming with FORTRAN and application of numerical methods
2. Solution techniques for dynamic programming problems
3. Policy analysis with stochastic growth and life cycle models

Reading:
Lecture notes will be provided.

Intended learning outcomes

After completing the course "Advanced Computational Economics" students will be able to
(i) edit and solve stochastic economic problems using advanced numerical techniques;
(ii) implement small scale economic models on the computer;
(iii) simulate tax and social security policy reforms and interpret the quantitative results in economic term.

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

Allocation of places

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Additional information

--

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
keinem Studiengang zugeordnet

Module title	Abbreviation
Policy and Management Evaluation Methods	12-M-PEM-262-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 offers an introduction to the fundamentals of causal inference and to widely used research designs in the social sciences. In the first part a framework for understanding causality is introduced. Specifically, the epistemological differences between association, intervention and counterfactuals are explained. Then it is shown why experiments are paramount in generating causal knowledge and which assumptions are needed for which level of the causal hierarchy. Finally, we will discuss two widely used approaches to causality in the social sciences, i.e. potential outcomes and directed acyclic graphs.

The second part is devoted to the research designs regressions analysis, difference-in-differences, instrumental variables, and regression discontinuity. The emphasis is how these research designs are for example applied to answer important questions in labour economics such as the effects of a minimum wage increase on employment or the effect of children on female labour supply and wages.

The assumptions each research design requires in order to identify a causal effect will be at center stage of the lecture. Therefore the emphasis is to teach students *what* one needs to estimate in order to answer a given question. Further, the research designs are discussed such that students will be able to evaluate and apply these research designs to other questions and fields.

Intended learning outcomes

At the end of the course, students should be able to understand basic concepts and methods of causal inference, as well as read, interpret, and assess the credibility of scientific publications. In addition, the course serves as preparation for advanced statistics and econometrics 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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
International Taxation			12-M-IB-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module discusses tax aspects (legal facts as well as economic effects) of cross-border business activities. Students become familiar with the principles of international taxation, relevant aspects of German income tax law, the function of double taxation treaties as well as recent developments of taxation within the European Union (mostly triggered by the Court of Justice of the European Union). The topics are introduced in the form of lectures. Complex case studies are used for an in-depth discussion of selected aspects.

Intended learning outcomes

After completion of the module students are able
(i) to assess tax issues of cross-border business activities and develop structured solutions;
(ii) to assess the economic effects of rules of international tax law on its own;
(iii) systematically apply double tax treaties.

The students have knowledge of the basics of international taxation and the German international tax law. They are able to judge and to analyze, using the relevant sources of law complex, case studies on the taxation of cross-border business activities independently and to develop design proposals for the solution.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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: 12.
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Public Finance			12-M-TPF-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Strategy, Competition and Policy

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Strategic Decisions and Competition			12-M-SDC-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

1. Strategic situations and decision making

2. Analyzing strategic situations with game theory

1. Noncooperative simultaneous move games
2. Nash equilibrium
3. Models of oligopoly markets

3. Dynamic Games

1. Two(-multi) stage games and subgame perfect equilibrium
2. Role of commitment in dynamic situations
3. Models of advertising
4. Wage bargaining and unions

4. Repeated Games

1. Emergence of coordination in long interactions
2. Collusion between competing firms
3. Time consistent monetary policy

5. Static games of incomplete Information

1. Bayesian Nash equilibrium
2. Auctions

6. Dynamic games of incomplete information

1. Moral hazard and nonlinear pricing
2. Perfect Bayesian equilibrium
3. Signalling games
4. Job-market signalling
5. Corporate investment and capital structure

Intended learning outcomes

After successful completion of this class, the students should be familiar with economic models that can be used to shape managerial strategy and aid in making decisions in strategic situations. Especially, by making use of simple two stage games, they should be able to formulate dynamic policies in a wide variety of strategic situations. The students will acquire an intuitive understanding of the underlying economic mechanisms which emerge from the analysis of game theoretic models for a wide variety of strategic situations arising in industrial economics, marketing, organization, finance, trade and labor. Moreover, they will acquire skills which enable them to make predictions in strategic situations by making use of simple mathematical models. By means of completing case based exercises, they will learn to transform real life business situations to an appropriate economic model. Based on an analysis of this model, they will be able to devise optimal strategies and derive the corresponding managerial implications.

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) portfolio (approx. 50 hours total) Language of assessment: English creditable for bonus
Allocation of places
--
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
keinem Studiengang zugeordnet

Module title			Abbreviation
European Competition Policy			12-M-WPE-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Outline of syllabus:
1. Legal environment, competition laws
2. Market definition
   - Qualitative methods
   - Simple quantitative methods
   - Hypothetical monopoly test
3. Horizontal agreements and collusion: repeated games and factors affecting likelihood of collusion
4. Horizontal mergers and collusion
   - Economic theory
   - Efficiency effects
   - Coordinated effects
5. Vertical relations and contracts
   - Economic analysis of contracts
   - "More economic approach"
6. Abuse of dominant position
   - Classification of abusive conduct
   - Economic analysis of abusive conduct and theory of harm

Intended learning outcomes

After completion of the module students can use the advanced concepts introduced in the lecture of competition policy, including the legal framework, the trace models and methods for the study of competition policy issues, as well as understand the approach of European competition policy in high profile cases. When they are confronted with practical problems, they can refer to these cases, and the same logic to practical examples apply by draining the relevant economic theories that identify variables to be measured and methodologies for assessing, and based on that adequate conclusions for appropriate cases. They will sufficiently understand the subject in order to open up that build upon literature in journals and being able to think critically.

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

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

Allocation of places

WM6:
There are no restrictions with regard to available places for students of the Master's degree programmes Management, International Economic Policy, Information Systems, Wirtschaftsmathematik (Mathematics for Economics) and Chinese and Economics as well as China Business and Economics. A total of 20 places will be allocated to students of other subjects; should the number of applications exceed the number of available places, these places will be allocated by lot.

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
keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title	Abbreviation
Theory of Industrial Organization	12-M-TI1-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Theory of industrial organisation:
1. Monopoly pricing
   - Nonlinear pricing and mechanism design
   - Dynamic pricing: experience goods, durable goods
2. Oligopoly pricing
   - Static price and quantity competition in homogeneous and differentiated goods markets
   - Comparative statics
   - Equilibrium market structure
3. Dynamic competition in oligopoly markets
   - Subgame perfect equilibrium and models of dynamic competition
   - Repeated games and collusion
4. Market Structure
   - Entry
   - Mergers
5. Strategic behaviour by incumbent firms
   - Entry deterrence and predation
   - Signalling and reputation
6. Vertical Relations and Restrictions
   - Double marginalization
   - Vertical contracts
7. Behavioral Industrial Organization
   - Reference Dependent Preferences and Framing Effects
   - Time inconsistent behavior

Intended learning outcomes

Students which complete this class will acquire a working knowledge of advanced theoretical models of competition in oligopoly markets as well as sophisticated pricing techniques in monopoly markets. They will learn the conditions under which the predictions of these models are valid. They will become familiar with applications of advanced game theoretic tools, such as dynamic models of competition, for studying interactions between firms in markets. By means of comprehensive exercises, they will apply the methods they learn in class to practically relevant problems. They will be in a position to read academic papers on related topics, assess the strengths and weaknesses of an approach, summarize and comment on these papers and suggest possible extensions.

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) portfolio (approx. 50 hours total)
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)
--
Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Market Research and Demand Analysis			12-M-EIO-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Discrete choice models with individual data
- Maximum Likelihood Estimation
- Multinomial Logit model
- Extensions: Nested Logit and Mixed Logit

Discrete choice models with aggregate data
- Homogeneous goods
- Hetereogeneous goods
- Endogeneity and instrumental variables estimation

Further applications
- Demand and Supply estimation
- Inferring marginal costs
- Using structural models for counterfactual policy analysis

Intended learning outcomes

The students taking this class will learn modern empirical methods in studying questions related to industry outcomes. They will become familiar with methods used in estimating demand and during exercises will learn how one can implement these methods in practice using statistical software. The lectures will help students to have a thorough understanding of the so-called New Empirical Industrial Organization (NEIO) methodology. The students will become familiar with methods used in estimating demand and imperfect competition models among firms. They will learn how to use such models to infer marginal costs as well as constructing policy simulations based on the estimated models to evaluate the effects of changes in the competitive environment, such as mergers. A student that successfully completes this course will not only be able to read empirical academic papers but will also implement a few important models in computer exercises. Furthermore, students will be able to draw implications of empirical studies for economic policy in areas such as antitrust and regulation.

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) portfolio (approx. 50 hours total)
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)
--
Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Advanced Microeconomics			12-M-AM-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

In a nutshell, microeconomic theory considers the behavior of individual economic agents and builds from this foundation to a theory of aggregate economic outcomes, which then can be applied for conducting welfare analysis and giving policy advice. This lecture addresses the core building block of this thought complex: individual decision making and behavior. Specifically, students will come to understand in detail the standard models of riskless consumer choice, choice under risk and intertemporal choice and learn about the empirical challenges and limitations of these models.

Throughout the lecture, we will work with precise mathematical formalizations of the ideas that we want to think and talk about. In consequence, a solid understanding of the mathematical toolbox of standard microeconomics (e.g., differential calculus and constrained optimization; basic set theory; integration by parts) will be helpful as it will allow to focus on the underlying economic intuition. However, every required mathematical concept will be introduced and explained along the way, such that a strong interest in formal economic analysis is more important than an advanced mathematical background.

The exposition is primarily based on the standard graduate textbooks

- Mas-Colell, Whinston and Green (1995): "Microeconomic Theory"
- Jehle and Reny (2001): "Advanced Microeconomic Theory"

Intended learning outcomes

After completing the course students will be able to
- explain essential findings of microeconomic theory,
- apply the involved methods to given stylized examples on their own,
- recognize in which real life situations and how the results can be applied.

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title	Abbreviation
Contract Theory	12-M-CT-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

During the 1960/70s, microeconomic theory came to acknowledge that many (if not most) economic transactions are characterized by asymmetric distribution of information – i.e., at least one of the parties participating in a transaction usually is privy to information that the remaining parties do not have access to. This asymmetric distribution of information subsequently was recognized to be a major impediment for transactions to be economically efficient. Contract theory addresses the question how the inefficiencies arising from asymmetric distribution of information can best be mitigated by appropriate design of the contractual (or, more generally, institutional) framework that governs the transaction under consideration. This lecture covers the baseline models of "moral hazard" (i.e., situations where one party has private knowledge after a contract has been signed) and "adverse selection" (i.e., situations where one party has private knowledge before a contract is signed). As applications we will address questions discussed in organizational, personnel or industrial economics, such as incentive design within organizations or the design of labor law regulations and competition laws.

Even though we will work with precise mathematical formalizations of the ideas that we want to think and talk about, this course requires little more than a solid understanding of basic differential calculus. More important than having a solid mathematical background is having a strong interest in formal economic analysis and fun with logical thinking and puzzle solving.

The exposition is primarily based on the following textbook: Laffont and Martimort (2002): "The Theory of Incentives"

Intended learning outcomes

After completing the course students will be able to
- explain essential findings of contract theory,
- apply the involved methods to given stylized examples on their own,
- interpret the properties of real-life contracts as the outcome of the interaction between two or more contracting parties in the presence of asymmetric information,
- evaluate government interventions with regard to their effect on the efficiency properties of the interaction between the contracting parties.

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title	Abbreviation
Econometrics 2	12-M-OE2-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Description:
This module deals with the basics, concepts and methods of the generalized least squares (GLS) framework. Partly as a motivation for the GLS model and partly for its own right, different specification and data problems as well as violations of model assumptions of the OLS estimator (as introduced in "Ökonometrie I" ("Econometrics I")) are discussed. This includes multicollinearity, a test for structural breaks, heteroskedastiticy and autocorrelation.
Linear algebra is used as formal aid.

Syllabus:
1. Specification analysis
2. Multicollinearity
3. Heteroskedastiticy
4. Autocorrelated disruptive terms
5. Generalized least squares (GLS)

Intended learning outcomes

Students acquire essential knowledge of the fundamentals, methods and concepts for estimating the generalized linear regression model (GLS) and can apply and interpret it. They are sensitized for specification problems, data problems and violations of the assumptions of the classical linear model (OLS) in order to be able to recognize, to assess and therefore adequately deal with these problems in theory and practice. This enables them to critically assess the use of the estimation methods in scientific work, to work independently on adequate implementation of empirical analyzes and to answer selected (economic) scientific issues if available data with the above-mentioned involved problems. The competences acquired in this course serve as a prerequisite for "Econometrics III", "Microeconometrics" und "Financial Econometrics".

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) portfolio (approx. 50 hours total)
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)
--
Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Econometrics 3			12-M-OE3-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Description:
This module deals with advanced econometric methods and concepts based on the classical and the generalized least squares estimator discussed in Ökonometrie I and II (Econometrics I and II). In particular, this includes the instrumental variable (IV) estimator, the generalized method of moments (GMM) estimator, distributed lag models as well as basic methods and concepts used in uni- and multivariate econometric time series analysis, including (non)stationarity, integration and cointegration.
Linear algebra is used as formal aid.

Syllabus:
1. Error-in-variables
2. IV estimation
3. Generalized least squares estimation
4. Distributed lag models
5. Stationary uni- and multivariate processes
6. Deterministic and stochastic trends
7. Integrated and cointegrated processes

Intended learning outcomes

The students acquire thorough understanding of advanced methods and concepts in econometrics. They get familiarized with diverse error-in-variables issues and will be capable of handling them appropriately. After the course, students understand the generalized method of moments (GMM) and the instrumental variable (IV) estimator to the extent that they can discuss their pros and cons, apply these to selected questions in quantitative economics and understand scientific papers using these methods. Furthermore, they become acquainted with selected time series issues, such as distributed lag models, non-stationarity, spurious correlation and cointegrated processes, enabling them to conduct a comprehensive time series analysis. In brief, the course enables students to apply the above mentioned methods and concepts to real life questions, assess their appropriateness and address their theoretical and practical benefits and shortcomings

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) portfolio (approx. 50 hours total)
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)
--
Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
European and German Competition Law I for Economists			02-N-P-W13a-221-m01
Module coordinator		**Module offered by**	
Dean of Studies Faculty of Law		Faculty of Law	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	--	--	

Contents

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Intended learning outcomes

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

V (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)

presentation (approx. 15 minutes) with handout (1 to 2 pages) and written examination (approx. 120 minutes)

Allocation of places

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Additional information

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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) Management (2018)
Master's degree (1 major) International Economic Policy (2018)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) International Economic Policy (2022)
Master's degree (1 major) Management (2022)
Master's degree (1 major) Economathematics (2022)
Master's degree (1 major) Management (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
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
European and German Competition Law II for Economists			02-N-P-W21a-221-m01
Module coordinator		**Module offered by**	
Dean of Studies Faculty of Law		Faculty of Law	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	--	--	

Contents

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Intended learning outcomes

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

V (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)

presentation (approx. 15 minutes) with handout (1 to 2 pages) and written examination (approx. 120 minutes)

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

--

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) Economathematics (2021)
Master's degree (1 major) International Economic Policy (2022)
Master's degree (1 major) Management (2022)
Master's degree (1 major) Economathematics (2022)
Master's degree (1 major) Management (2024)
Master's degree (1 major) International Economic Policy (2024)
Master's degree (1 major) Economathematics (2024)
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
Organizational Economics and Digital Transformation	12-M-OEDT-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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: after announcement

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

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Experimental Economics			12-M-EE-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Aim and outline of the course:

The Nobel Prizes for Daniel Kahneman and Vernon Smith 2002 and for Richard Thaler 2017 have underlined the increasing importance of experimental methods in economics. Experimental methods are used to collect data using randomization or a highly controlled environment. This course offers an introduction to the methodology of experimental economics and economic laboratory experiments.

In the methodology part it is shown why experiments are a good tool to generate scientific knowledge. Furthermore, widely used techniques in economic experiments are explained and how economic experiments differ from experiments in other social sciences. This part also deals with methods of reasoning, i.e. how inferences can be drawn from evidence that is generated by experiments.

The unifying theme of all laboratory experiments that will be covered is, understanding the behavior of agents, who produce and/or distribute goods by interacting with each other. The first topic is about markets and it includes experiments that shown under which conditions and institutions markets work very efficient and under which conditions and institutions they fail to yield a desirable outcome. The second topic includes experiments that look at the behavior of two agents, who bargain about the distribution of a common pie. On the basis of these results we will discuss experiments that try to explain bargaining behavior and show how agents deviate systematically from the neoclassical framework, i.e. the "homo oeconomicus". The third topic deals with cooperation and institutions that support cooperation in the long run as equilibrium. Further, systematic evidence will be presented on how individuals can be classified in different cooperative types and how these types can explain economic outcomes in natural environments. The forth topic concerns reciprocity, a strong determining factor of human behavior that is nearly universal. We will cover experiments that show how reciprocity can enforce relational contracts in the absence of third party enforcement. Moreover, there will be a special emphasis on how reciprocity affects labor markets.

When time permits up to two additional topics will be covered. The first topic is about gender differences in competitiveness, risk-aversion and overconfidence. The second topic is about the elicitation of social norms.

Prerequisites: Participants should have a basic knowledge about microeconomics, game theory and econometrics.

Literature:

The course will be mainly paper based but the following books provide a good overview and complement the discussed papers.

- Dhami, S. (2016). The Foundations of Behavioral Economic Analysis. Oxford University Press.
- Guala, F. (2005). The Methodology of Experimental Economics. Cambridge University Press

In addition lecture slides will be provided.

Intended learning outcomes

The aim of the course is to familiarize students with the methodology experimental economics. Further, students will be enabled to understand how causal evidence can be obtained using controlled variation and how to generalize from results that are derived in artificial laboratory setting to more natural environments. Moreover, the

course shall deepen students' understanding of human decision making in multi-agent settings and to make them aware of systematic heterogeneous human behavior in the production and distribution of goods.

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) 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

30 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

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

keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Strategy, Competition and Policy			12-M-TSCP-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Corporate Finance and Risk Management

(20 ECTS credits)

Core

(10 ECTS credits)

Module title	Abbreviation
Portfolio and Capital Market Theory	12-M-CF2-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module conveys profound knowledge of individual portfolio choices and on this basis the most important capital market theory (namely capital asset pricing model) is introduced, including its assumptions, implications and extensions. Syllabus:

1. Modern Portfolio Selection
   1. 2 Asset-Case
   2. Multiple-Asset-Case
   3. Critique of Portfolio Theory
2. Capital Asset Pricing Model
   1. Assumptions and Derivation
   2. Implications
3. Empirical Aspects, Extensions and Alternatives

Intended learning outcomes

This module enables the students
(i) to explain and to determine the optimal capital market position of an investor given the different investment opportunities and individual utility function;
(ii) to understand and use the central CAPM propositions for valuating risky assets.

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) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Efficiently Inefficient Financial Markets			12-M-EIFM-262-m01
Module coordinator		**Module offered by**	
--		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	--	--	

Contents

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Intended learning outcomes

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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) portfolio (approx. 50 hours total)
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

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

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Module appears in

keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title	Abbreviation
Discounted Cashflow	12-M-CF1-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The module covers discounted cash flow (DCF) methods under certainty as well as uncertainty in the context of the valuation of unlevered and levered companies. Furthermore, tax aspects as well as their influence on the company value are considered.

Syllabus:

1. Introduction
2. DCF Theory under certainty
   1. NPV without taxes
   2. NPV with personal taxes
   3. NPV with corporate taxes
3. DCF Theory under uncertainty
   1. DCF basics
   2. Valuation of unlevered companies
   3. Valuation of levered companies
4. Practice of DCF methods

Intended learning outcomes

After completion of this module, the students will know a variety of discounted cashflow techniques and are able to apply properly them in order to evaluate projects or firms.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Risk Management			12-M-CF3-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This module deals with the valuation and use of classical derivatives in financial markets. In particular, futures, swaps and options are considered as well as their possible applications in the context of financial risk management. In particular, students will be introduced to the theory involved in pricing options, as well as important valuation parameters. In addition, some established risk measures such as value-at-risk are discussed.
1. Introduction
2. Futures & Forwards
3. Swaps
4. Options
5. Measures of risk

Intended learning outcomes

Upon completion of this module students will be able to,
(i) independently determine the fair value of the derivatives discussed, as well as
(ii) to understand and evaluate common capital market hedging strategies.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Corporate Finance			12-M-CF4-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module comprises selected topics in corporate finance. On the one hand we cover forward transactions and derivatives, including futures and options, as well as an outlook on other financial instruments such as swaps. The focus is on introduction, trading, valuation, and strategies for managing these instruments. On the other hand, legal foundations of risk management are discussed. Students will gain knowledge about important legal regulations and their significance for compliance in companies, especially in corporate, criminal, securities, anti-trust, and labor law.

Intended learning outcomes

Upon completion of the module, students will be able to understand and apply the functions and valuations of derivatives, assess the legal frameworks of risk management, and develop and analyze basic hedging strategies.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Analysis of Financial Market Data			12-M-FMO-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Description:
The module covers the fundamentals, methods and concepts for the empirical analysis of financial market data. The concept of market efficiency is explained and critically examined with reference to the random walk hypothesis. To test this hypothesis, a number of parametric and non-parametric methods are proposed and applied in practice. Based on the findings, market microstructure models that can explain some important empirical findings will be discussed. In addition, the course describes event studies for testing the significant impact of corporate news on the share price and discusses issues of univariate time series analysis such as AR(I)MA and ARCH / GARCH models that are indispensable for modelling financial market data. In the final part of the course, CAPM is discussed and examined, in particular with regard to its empirical applicability.

Syllabus:
1. Information efficiency
2. Random walk
3. Theoretical market models
4. Event studies
5. Univariate modelling of time series data
6. Models to explain volatility (ARCH and GARCH)
7. Estimation of the capital asset pricing model

Reading:
Alexander, C.: A Guide to Financial Data Analysis, Wiley.
Campbell, JY, Lo, AW, MacKinley, AC: The Econometrics of Financial Markets, Princeton University Press.
Geyer, A.: Information, Erwartung und Risiko. Aspekte der Verteilung, Abhängigkeit und Varianz von finanzwirtschaftlichen Zeitreihen, Verlag V. Florentz.
Hamilton, JD: Time Series Analysis, Princeton University Press.
Mills, T.: Econometric Modelling of Financial Time Series, Cambridge University Press.
Taylor, S.: Modelling Financial Time Series, Wiley.

Intended learning outcomes

Students have significant knowledge of the fundamentals, methods and concepts that are needed for the empirical analysis of financial market data. They can autonomously perform statistical test decisions with statistic programs such as R and critically analyze their economic importance. In addition, the students learn the independent handling of empirical capital market data and at the end of the course, they will have the ability to develop own functions and routines, for example for R.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title	Abbreviation
Accounting and Capital Markets	12-M-REKA-262-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 financial and management accounting, their functions, possible configurations as well as their impact on internal and external recipients under consideration of the institutional setting. In this context, an economic perspective has priority over detailed legal arrangements and regulations by the standard setters. Based on the theoretical foundations of information economics as well as decision-making and balance sheet theories, questions regarding cost accounting, management control systems, behavioral control and decision-making functions of accounting, quality of financial reporting, and publicity are discussed.

Intended learning outcomes

Initially, students acquire a fundamental knowledge of the conception and impact of management and financial accounting as information systems, as well as the economic impacts of the configuration of management and financial accounting. They understand analytical and empirical models from relevant research literature and can interpret and explain the results. Upon completion of the course, the students are able to assess and evaluate the impacts of changes in institutional general frameworks such as changes in valuation standards, publicity rules or regulations about the distribution of profits in enterprises and on capital markets.

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) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Financial Analysis			12-M-UA-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

In today's rapidly changing economic landscape, the ability to effectively analyze financial information is more critical than ever. Financial analysis is essential for interpreting past and current financial data to make predictions about future performance and guide strategic decisions that affect the overall business. This module offers students the tools and methodologies needed to evaluate the financial position of companies, assess investment opportunities, and make informed financial decisions. We provide a basic understanding of financial statement analysis, particularly on how to extract value-relevant information from financial statements, carry out financial statement analysis, and use financial data to value corporations.

Outline
- Introduction to financial analysis
- Analysis of earnings information
- Analysis of balance sheet information
- Analysis of cash flows
- Analysis of selected balance sheet positions

Intended learning outcomes

Upon completion of this module, students will be able to:
- Understand corporate financial statements and identify value-relevant information;
- Provide relevant valuation techniques and recognize the fundamental role of financial information in the valuation process;
- Apply valuation models to practical cases and make informed investment 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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Empirical Banking and Finance			12-M-EBF-262-m01
Module coordinator		**Module offered by**	
--		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	--	--	

Contents

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Intended learning outcomes

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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) portfolio (approx. 50 hours total)
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

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

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Efficiently Inefficient Financial Markets			12-M-EIFM-262-m01
Module coordinator		**Module offered by**	
--		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	--	--	

Contents

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Intended learning outcomes

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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) portfolio (approx. 50 hours total)
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

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

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Finance			12-M-TCFRM-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Strategic Corporate Communication

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Communication in Business and Economics			12-M-BUC-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The lecture names introductory relevant communication models. Furthermore, the theoretical models of PR are discussed. The added value of communication for companies, business, politics, and science is explained. The discrepancy between journalism and PR is discussed, as well as the basic elements, instruments, goals, and forms of PR. The preparation and implementation of press meetings, conferences, campaigns, and events will be systematically explained, and the central aspects of corporate communications will be outlined. The exercise deals with the practical implementation of journalistic styles in the various media and provides an overview of the possibilities and concepts of PR work across different media and target groups.

Intended learning outcomes

After participating in the module courses, students are able to understand and apply PR and its forms, elements as well as methods and in a holistic context. Students learn professional competencies in the field of (business) communication with regard to reflection, argumentation, and exchange as a PR consultant in different areas. In addition, students will be able to apply concrete PR instruments in practice and prepare them professionally.

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) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title	Abbreviation
Business Communication in Print, Online and Social Media	12-M-ECC-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module focuses on the relationship of offer characteristics with benefit aspects for the end consumer and the business models on the part of the providers. Starting from the basics of editorial work and professional text management, the new forms of communication management in social networks are presented. The focus of the lecture is on the use of social media in campaigns (Facebook, Twitter, Instagram, Tiktok). There will also be exercises on various Web 2.0 applications (e.g. online social networks) and on the collection and interpretation of online market research data. Crisis communication of companies will also be covered – in particular opinion-makers on the web as well as protest culture on the web.

Intended learning outcomes

By participating in the module courses, students acquire job-specific skills in research and interviewing. Students are able to collect and organize information according to criteria of topicality and relevance. In addition, students are taught journalistic expertise so that they are able to recognize the forms of presentation of news, reports, and background reports with their media characteristics and communicative functions in different media genres and create them themselves. Students will be able to prototype and design a social media campaign, describe the editorial and technical approach including feedback, response, and customer engagement. In addition, students will be able to design counter-strategies for corporate communication crises.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Project Modul: Crossmedial Business Communication			12-M-PCW-262-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

Online and cross-media journalism takes into account the current media convergence. This seminar focuses on the individual elements and phases of production for the website, Facebook, Instagram, Twitter, and Tiktok against the background of current trends and developments. In addition, the seminar covers current trends in journalism. In addition to content-related topics, the focus is also on new methods (e.g. of storytelling) as well as technical developments. A technical introduction to equipment and editing will be given during the seminar.

Intended learning outcomes

After successful completion, students will be able to name the individual phases of online and cross-media journalism and carry them out on sample projects, explain and go through the individual production stages, use methods and tools for the individual steps.

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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

20 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

keinem Studiengang zugeordnet

Module title			Abbreviation
Project Modul: Audiovisual Business Communication			12-M-PACW-262-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

In this seminar, students learn the basics of audiovisual forms of presentation (news, background report, reportage). They are first introduced to the use of cameras and editing. Students learn how to set news and stories in the picture and how to organize shoots. Television-specific journalistic basics such as the structure and design of a television report, organization, and handling of different filming situations, creating storyboards, copywriting, and speaking are learned.

Intended learning outcomes

Upon completion of the seminar, students will be able to apply editorial and technical knowledge and skills (including teamwork) to the production of television features.

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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

20 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

keinem Studiengang zugeordnet

Module title			Abbreviation
Vertical Storytelling			12-M-VS-262-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

More than 70 percent of Germans* use the Internet on their smartphones, and billions of users around the world use apps such as WhatsApp, Instagram, and TikTok to communicate every day - much of digital communication now takes place on mobile devices. Social media, messenger services and mobile-optimized websites are now a natural part of any communications mix. The challenge for professional communicators is to adequately consider the mobile delivery channels for their content. The seminar is hands-on and teaches participants how to produce content with the smartphone for the smartphone. It covers the basics of mobile reporting, current apps and their features, different content formats and user behavior.

Intended learning outcomes

In this seminar, students will learn how to produce content with the smartphone for the smartphone. In addition to the basics of mobile reporting, students will learn about the latest apps, their features, different content formats and user behavior. In the practical phase of the seminar, students will design and produce targeted content for social media apps.

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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

40 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

keinem Studiengang zugeordnet

Module title	Abbreviation
Entertainment Marketing	06-ENT-Ema-231-m01

Module coordinator	Module offered by
holder of the Professorship of Media and Business Communication	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 module, we analyze entertainment institutions, entertainment offerings, or even entertaining celebrities with respect to their market value and their branding. Starting from an analysis of the current status of the brand, we strategically plan a re-positioning of the brand including a new brand communication. The new brand strategy is finally presented in a pitch.

Intended learning outcomes

Students learn to analyze and to optimize entertainment brands which are suboptimally positioned in the market. They learn to evaluate entertainment brands according to the requirements of the entertainment market, and not according to their own interest or liking. They get familiar with a pitch presentation being able to present a brand strategy in a marketing-like manner.

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

S (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) oral examination of one candidate each (30 minutes) or
b) presentation (15 to 30 minutes) with written elaboration (10 to 15 pages) or
c) portfolio (15 to 20 pages)
Language of assessment: German and/or English

Allocation of places

WM8
There are no restrictions with regard to available places for students of the Master's degree programmes Media Entertainment.
A total of 5 places each will be allocated by lot to students of the Master's degree programmes Economathematics. Should there be more than max. 5 applications, places will be allocated by lot. A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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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) Economathematics (2021)
Master's degree (1 major) Economathematics (2022)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Economathematics (2024)

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

Module title	Abbreviation
Advertising and public relations	06-MK-MKW2-231-m01

Module coordinator	Module offered by
holder of the Professorship of Media and Business Communication	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	undergraduate	--

Contents

This module aims to provide conceptual and structural knowledge about marketing, advertising, public relations, and media planning.

Intended learning outcomes

Students learn to think strategic and market-oriented by taking the perspective of business companies and organisations. They become familiar with central concepts, occupational areas, and mindsets of the marketing and PR field.

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

V (2) + S (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. 100 minutes) or
b) oral examination of one candidate each (approx. 30 minutes)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

WM9
There are no restrictions with regard to available places for students of the Master's degree programmes Media Communication.
A total of 10 places each will be allocated by lot to students of the Master's degree programmes Managment as well as Econmathematics. Should there be more than max. 10 applications, places will be allocated by lot. 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

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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) Economathematics (2021)
Master's degree (1 major) Economathematics (2022)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Mass media processes and effects	06-MK-MKW1-212-m01

Module coordinator	Module offered by
holder of the Professorship of Media and Business Communication	Institute of Human Computer Media

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

Duration	Module level	Other prerequisites
1 semester	undergraduate	--

Contents

This module provides knowledge about fundamental concepts, theories and findings of media reception and media effects research. Using selected areas of mass media communication (e. g., advertising, music, entertainment), the module investigates, questions and provides students with deeper insights into these fundamentals.

Intended learning outcomes

Students learn to attribute media effects to complex causes and processes. They develop a systematic and analytic perspective on media effects. They further be able to apply basic concepts and theories to concrete media offers.

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

V (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. 50 minutes) or
b) oral examination of one candidate each (approx. 20 minutes)
Language of assessment: German and/or English

Allocation of places

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Additional information

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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) Management (2018)
Bachelor's degree (1 major) Media Communication (2021)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Management (2022)
Master's degree (1 major) Economathematics (2022)
Master's degree (1 major) Management (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Management (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Topics in Strategic Corporate Communication			12-M-TSCC-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Econometrics

(20 ECTS credits)

Core

(10 ECTS credits)

Module title	Abbreviation
Econometrics 1	12-M-OE1-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Description:
This module deals with the basic concept and methodology of the ordinary least squares (OLS) regression model. In particular, model assumptions and properties are discussed and formally motivated. In addition, the module examines linear restrictions on the model's explanatory variables as well as dummy variables and introduces tests to verify simple and multiple linear restrictions.

Linear algebra is used as formal aid.

Outline of syllabus:
1. Random variables
2. Important distributions
3. Point estimates
4. Simple linear regression model
5. Model assumptions
6. Model properties
7. Simple hypothesis tests
8. Multiple linear regression model
9. Linear restrictions
10. Dummy variables
11. Multiple hypothesis tests

Intended learning outcomes

The students acquire knowledge of the basics, concepts and methods used in the classical linear regression model and understand the role of econometrics in science and data analysis. In particular, they learn how to analytically derive, calculate and interpret the coefficients, standard errors and p-values of a classic regression output of the multiple regression model. Furthermore, they are able to formally state and motivate the assumptions and properties of OLS and know how to deal with transformed and dummy variables. Additionally, students will be able to test multiple linear restrictions on the parameters and will be able to apply these tests to real economic, business and social science questions.
The competences acquired in this course serve as a prerequisite for "Econometrics II", "Econometrics III", "Microeconometrics" und "Financial Econometrics".

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Econometrics 2			12-M-OE2-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Description:
This module deals with the basics, concepts and methods of the generalized least squares (GLS) framework. Partly as a motivation for the GLS model and partly for its own right, different specification and data problems as well as violations of model assumptions of the OLS estimator (as introduced in "Ökonometrie I" ("Econometrics I")) are discussed. This includes multicollinearity, a test for structural breaks, heteroskedastiticy and autocorrelation.
Linear algebra is used as formal aid.

Syllabus:
1. Specification analysis
2. Multicollinearity
3. Heteroskedastiticy
4. Autocorrelated disruptive terms
5. Generalized least squares (GLS)

Intended learning outcomes

Students acquire essential knowledge of the fundamentals, methods and concepts for estimating the generalized linear regression model (GLS) and can apply and interpret it. They are sensitized for specification problems, data problems and violations of the assumptions of the classical linear model (OLS) in order to be able to recognize, to assess and therefore adequately deal with these problems in theory and practice. This enables them to critically assess the use of the estimation methods in scientific work, to work independently on adequate implementation of empirical analyzes and to answer selected (economic) scientific issues if available data with the above-mentioned involved problems. The competences acquired in this course serve as a prerequisite for "Econometrics III", "Microeconometrics" und "Financial Econometrics".

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Econometrics 3			12-M-OE3-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Description:
This module deals with advanced econometric methods and concepts based on the classical and the generalized least squares estimator discussed in Ökonometrie I and II (Econometrics I and II). In particular, this includes the instrumental variable (IV) estimator, the generalized method of moments (GMM) estimator, distributed lag models as well as basic methods and concepts used in uni- and multivariate econometric time series analysis, including (non)stationarity, integration and cointegration.
Linear algebra is used as formal aid.

Syllabus:
1. Error-in-variables
2. IV estimation
3. Generalized least squares estimation
4. Distributed lag models
5. Stationary uni- and multivariate processes
6. Deterministic and stochastic trends
7. Integrated and cointegrated processes

Intended learning outcomes

The students acquire thorough understanding of advanced methods and concepts in econometrics. They get familiarized with diverse error-in-variables issues and will be capable of handling them appropriately. After the course, students understand the generalized method of moments (GMM) and the instrumental variable (IV) estimator to the extent that they can discuss their pros and cons, apply these to selected questions in quantitative economics and understand scientific papers using these methods. Furthermore, they become acquainted with selected time series issues, such as distributed lag models, non-stationarity, spurious correlation and cointegrated processes, enabling them to conduct a comprehensive time series analysis. In brief, the course enables students to apply the above mentioned methods and concepts to real life questions, assess their appropriateness and address their theoretical and practical benefits and shortcomings

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title	Abbreviation
Analysis of Financial Market Data	12-M-FMO-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Description:
The module covers the fundamentals, methods and concepts for the empirical analysis of financial market data. The concept of market efficiency is explained and critically examined with reference to the random walk hypothesis. To test this hypothesis, a number of parametric and non-parametric methods are proposed and applied in practice. Based on the findings, market microstructure models that can explain some important empirical findings will be discussed. In addition, the course describes event studies for testing the significant impact of corporate news on the share price and discusses issues of univariate time series analysis such as AR(I)MA and ARCH / GARCH models that are indispensable for modelling financial market data. In the final part of the course, CAPM is discussed and examined, in particular with regard to its empirical applicability.

Syllabus:
1. Information efficiency
2. Random walk
3. Theoretical market models
4. Event studies
5. Univariate modelling of time series data
6. Models to explain volatility (ARCH and GARCH)
7. Estimation of the capital asset pricing model

Reading:
Alexander, C.: A Guide to Financial Data Analysis, Wiley.
Campbell, JY, Lo, AW, MacKinley, AC: The Econometrics of Financial Markets, Princeton University Press.
Geyer, A.: Information, Erwartung und Risiko. Aspekte der Verteilung, Abhängigkeit und Varianz von finanzwirtschaftlichen Zeitreihen, Verlag V. Florentz.
Hamilton, JD: Time Series Analysis, Princeton University Press.
Mills, T.: Econometric Modelling of Financial Time Series, Cambridge University Press.
Taylor, S.: Modelling Financial Time Series, Wiley.

Intended learning outcomes

Students have significant knowledge of the fundamentals, methods and concepts that are needed for the empirical analysis of financial market data. They can autonomously perform statistical test decisions with statistic programs such as R and critically analyze their economic importance. In addition, the students learn the independent handling of empirical capital market data and at the end of the course, they will have the ability to develop own functions and routines, for example for R.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: German and/or English
creditable for bonus

Allocation of places
--
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Empirical HR Research with Stata			12-M-EPF-262-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 seminar "Empirische Personalforschung" ("Empirical HR Research with STATA") introduces and discusses the most important estimation problems and their application in the software package STATA. In addition, students learn, with the help of basic problems of personnel economics, how estimation programs are programmed in STATA.
Reading list to be provided in class.

Intended learning outcomes

The aim of the seminar is to enable students to understand and apply the most important estimation programmes and their application in STATA with a focus on problems in personnel economics.

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

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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: 12.
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: each semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Market Research and Demand Analysis			12-M-EIO-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Discrete choice models with individual data
- Maximum Likelihood Estimation
- Multinomial Logit model
- Extensions: Nested Logit and Mixed Logit

Discrete choice models with aggregate data
- Homogeneous goods
- Hetereogeneous goods
- Endogeneity and instrumental variables estimation

Further applications
- Demand and Supply estimation
- Inferring marginal costs
- Using structural models for counterfactual policy analysis

Intended learning outcomes

The students taking this class will learn modern empirical methods in studying questions related to industry outcomes. They will become familiar with methods used in estimating demand and during exercises will learn how one can implement these methods in practice using statistical software. The lectures will help students to have a thorough understanding of the so-called New Empirical Industrial Organization (NEIO) methodology. The students will become familiar with methods used in estimating demand and imperfect competition models among firms. They will learn how to use such models to infer marginal costs as well as constructing policy simulations based on the estimated models to evaluate the effects of changes in the competitive environment, such as mergers. A student that successfully completes this course will not only be able to read empirical academic papers but will also implement a few important models in computer exercises. Furthermore, students will be able to draw implications of empirical studies for economic policy in areas such as antitrust and regulation.

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Advanced Computational Economics			12-M-NGM-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Description:
This course will mostly be concerned with the analysis of public policy (in areas such as taxation, social security etc.). Providing students with state-of-the-art techniques for quantitative macroeconomic research in this very field and familiarising them with the relevant literature, this course will teach students how such policies redistribute between different generations and also within generations, how they may improve risk sharing when markets are incomplete and how they can trigger distortions and therefore hurt the aggregate economy.

Outline of syllabus:
1. Programming with FORTRAN and application of numerical methods
2. Solution techniques for dynamic programming problems
3. Policy analysis with stochastic growth and life cycle models

Reading:
Lecture notes will be provided.

Intended learning outcomes

After completing the course "Advanced Computational Economics" students will be able to
(i) edit and solve stochastic economic problems using advanced numerical techniques;
(ii) implement small scale economic models on the computer;
(iii) simulate tax and social security policy reforms and interpret the quantitative results in economic term.

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title	Abbreviation
Policy and Management Evaluation Methods	12-M-PEM-262-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 offers an introduction to the fundamentals of causal inference and to widely used research designs in the social sciences. In the first part a framework for understanding causality is introduced. Specifically, the epistemological differences between association, intervention and counterfactuals are explained. Then it is shown why experiments are paramount in generating causal knowledge and which assumptions are needed for which level of the causal hierarchy. Finally, we will discuss two widely used approaches to causality in the social sciences, i.e. potential outcomes and directed acyclic graphs.

The second part is devoted to the research designs regressions analysis, difference-in-differences, instrumental variables, and regression discontinuity. The emphasis is how these research designs are for example applied to answer important questions in labour economics such as the effects of a minimum wage increase on employment or the effect of children on female labour supply and wages.

The assumptions each research design requires in order to identify a causal effect will be at center stage of the lecture. Therefore the emphasis is to teach students *what* one needs to estimate in order to answer a given question. Further, the research designs are discussed such that students will be able to evaluate and apply these research designs to other questions and fields.

Intended learning outcomes

At the end of the course, students should be able to understand basic concepts and methods of causal inference, as well as read, interpret, and assess the credibility of scientific publications. In addition, the course serves as preparation for advanced statistics and econometrics 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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: English
creditable for bonus

Allocation of places

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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
keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Econometrics			12-M-TEC-262-m01
Module coordinator		**Module offered by**	
--		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	--	--	

Contents

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Intended learning outcomes

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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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

--

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

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Module appears in

keinem Studiengang zugeordnet

International Economics

(20 ECTS credits)

Core

(10 ECTS credits)

Module title	Abbreviation
International Trade and the Multinational Firm	12-M-ITMF-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Content
The lecture starts out with theories of international trade based on comparative advantage (Ricardo and Heckscher-Ohlin) followed by theories based on monopolistic and oligopolistic competition to explain intra-industry trade. The final part covers firm heterogeneity and multinational firms. [If time permits the Armington model and the standard neoclassical model will be addressed.]

Outline
I Ricardian Trade Theory
II Heckscher-Ohlin Trade Theory
III New Trade Theory: Intra-Industry Trade, Increasing Returns to Scale, Imperfect Competition
IV Firm Heterogeneity, Trade and FDI
V The Multinational Firm

Literature:
The module draws heavily on articles from scholarly journals and handbooks.
A detailed list of references with further references, notably journal articles, is provided with each chapter of the lecture.
Material from the following books is also used:

Helpman, E. (2011). Understanding Global Trade. Princeton University Press.
Feenstra, R.C. (2016). Advanced International Trade. Theory and Evidence. Princeton University Press, Second Edition
Caves, R., R.W. Jones and J.A. Frankel (2007). World Trade and Payments. Addison Wesley
Bhagwati, J., A. Panagariya and T. N. Srinivasan (1998). Lectures on International Trade. Second Edition. MIT Press
Gandolfo, G. (1998). International Trade Theory and Policy. Springer-Verlag, Berlin and New York
Markusen, J.R., J.R. Melvin, W.H. Kaempfer, K. E. Maskus (1995). International Trade. McGrawHill
Barba Navaretti, G. and A.J. Venables (2004). Multinational Firms in the World Economy. Princeton University Press

Intended learning outcomes

The students acquire the ability to critically understand the causes and drivers of world trade and the developments of specialization patterns in the global economy. They learn to analyze, discuss and defend these developments and to apply the tools and methods to evaluate controversies associated with the ongoing deepening of the international division of labor, in particular the repercussions of the global economy on national economies.

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) portfolio (approx. 50 hours total)

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
--
Workload
150 h
Teaching cycle
Teaching cycle: winter semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
--
Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Trade Policy and the World Trading System			12-M-TP-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Content
The module starts out with a sketch of key facts and the evolution of the world trading system as well as current trade policy controversies. The main part of the lecture deals with trade policy instruments (e.g. tariffs and quotas) and arguments in favor of trade policy interventions (the terms of trade, strategic trade policy, infant industries, industrial policy, environmental policy). Political economy issues are also addressed.

Outline
1 The evolution of the world trading system and current issues
2 Trade policy instruments and their effects under perfect competition
3 The competition effect of trade opening
4 Domestic distortions
5 International market power and trade policy
6 Political economy and the world trading system

Literatur:
The main text used is:
Helpman, E. und P.R. Krugman (1989). Trade Policy and Market Structure. The MIT Press, Cambridge, Massachusetts.
The following monographs cover the evolution of the world trading system and the evolution of ideas in trade policy making:
Bhagwati, J. (2002). Free Trade Today, Princeton University Press
Bhagwati, J. (2005). In Defense of Globalization. Oxford University Press
Irwin, D. (2020). Free Trade Under Fire, Princeton University Press, 5th Edition (as well as former editions partially containing further material)
Irwin, D. (1996). Against the Tide. An Intellectual History of Free Trade, Princeton University Press
Basic refreshers are
Krugman, P.R., M. Obstfeld und M. Melitz (2018), International Economics. Theory and Policy. Addison-Wesley, 11th Edition
Caves, R., R.W. Jones und J.A. Frankel (2007), World Trade and Payments. An Introduction. Addison-Wesley, 10th Edition
This literature is complemented by papers from scholarly journals.

Intended learning outcomes

Students acquire the ability to critically understand the effects and issues associated with the use of trade policy instruments. They are enabled to understand and evaluate the causes and consequences of interventions in international trade on the aggregate economy, producers and consumers, the foreign trading partners and the world trading system both analytically as well as in an intuitive manner. Students also acquire the scientific knowledge to grasp the factors determining the structure and dynamics of the world trading order

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 120 minutes) or b) portfolio (approx. 50 hours total) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered creditable for bonus
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)
--
Module appears in
keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title	Abbreviation
Advanced Macroeconomics	12-M-MFF-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Content
The course covers long-run aspects of macroeconomics. We start with a review of the facts of long-run growth and a review of the Solow-growth model. The lecture then focuses on the infinite-horizon Ramsey-Cass-Koopmans model, on endogenous growth theory and it puts the roles of human capital and institutions under scrutiny. Applications of this framework involving urban and regional growth, resources and the environment will be taken up, time permitting.

Outline
I Facts and the Solow Growth Model
II Infinite-Horizon Ramsey-Cass-Koopmans model
III Endogenous Growth
IV Human Capital, Social Infrastructure and Beyond
V Applications (Urban and regional growth; Growth, resources and the environment)

Literature:
The course draws strongly on the textbook:
David Romer, Advanced Macroeconomics, 4th edition, McGraw-Hill Irwin.
We will use journal articles and research papers at several parts of the lecture.

Intended learning outcomes

Students acquire a working knowledge of the key models and analytical tools of advanced macroeconomics. This enables them to identify the key forces that determine the determinants of income levels and growth rates of incomes, to make informed policy analysis and statements and to critically evaluate current controversies and developments as well as to conduct their own research.

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Economic Geography			12-M-EG-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Content
The lecture starts with a brief motivation of the core issues and a short overview over key forces driving the allocation of economic activity in space. The main parts of the lecture cover the functioning and evolution of cities and city systems, and the economic geography of regions and countries.

I Motivation and Facts
II Location Basics
- Forces Shaping the Location of Economic Activity in Space
- Some Intellectual Background

III Urban and Regional Economics
- The Spatial Structure of Cities
- City Systems

III New Economic Geography
- From the New Trade Theory to the New Economic Geography
- Footloose Capital Model and Policy Applications
- Core Periphery Models and Policy Applications
- Empirics

Literature:
The course uses a combination of textbooks and journal articles. Articles from the Handbook of Urban and Regional Economics (current and previous volumes) are heavily used. Useful books are:
Brakman, W., H. Garretsen and Ch. van Marrewijk, 2009, The New Introduction to Geographical Economics, Cambridge University Press
Baldwin, R., R. Forslid, P. Martin, G. Ottaviano and F. Robert-Nicoud, 2003, Economic Geography and Public Policy, Princeton, 2003
Combes, P.P, Th. Mayer and J.F. Thisse, 2008, Economic Geography. The Integration of Regions and Nations, Princeton University Press
Fujita, M., P.R. Krugman and A.J. Venables, 1999: The Spatial Economy, MIT Press
Fujita, M. and J.-F. Thisse (2013). Economics of Agglomeration. Cities, Industrial Location and Regional Growth. Cambridge University Press.
Krugman, P.R., 1991, Geography and Trade, MIT Press

Intended learning outcomes

Students acquire a knowledge of the forces which determine the allocation of economic activity in space and they learn to apply fundamental models of cities, city systems and of regional agglomerations to understand and analyze policy issues involving local, regional and international policy questions both analytically and in an economic intuitive way.

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) portfolio (approx. 50 hours total)

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
keinem Studiengang zugeordnet

Module title			Abbreviation
European Competition Policy			12-M-WPE-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Outline of syllabus:
1. Legal environment, competition laws
2. Market definition
   - Qualitative methods
   - Simple quantitative methods
   - Hypothetical monopoly test
3. Horizontal agreements and collusion: repeated games and factors affecting likelihood of collusion
4. Horizontal mergers and collusion
   - Economic theory
   - Efficiency effects
   - Coordinated effects
5. Vertical relations and contracts
   - Economic analysis of contracts
   - "More economic approach"
6. Abuse of dominant position
   - Classification of abusive conduct
   - Economic analysis of abusive conduct and theory of harm

Intended learning outcomes

After completion of the module students can use the advanced concepts introduced in the lecture of competition policy, including the legal framework, the trace models and methods for the study of competition policy issues, as well as understand the approach of European competition policy in high profile cases. When they are confronted with practical problems, they can refer to these cases, and the same logic to practical examples apply by draining the relevant economic theories that identify variables to be measured and methodologies for assessing, and based on that adequate conclusions for appropriate cases. They will sufficiently understand the subject in order to open up that build upon literature in journals and being able to think critically.

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

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

Allocation of places

WM6:
There are no restrictions with regard to available places for students of the Master's degree programmes Management, International Economic Policy, Information Systems, Wirtschaftsmathematik (Mathematics for Economics) and Chinese and Economics as well as China Business and Economics. A total of 20 places will be allocated to students of other subjects; should the number of applications exceed the number of available places, these places will be allocated by lot.

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
keinem Studiengang zugeordnet

Module title			Abbreviation
European Public Finance			12-M-EFP-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The course aims at introducing the main public finance issues in the European Union. Students will learn how the revenues of the Union are generated and how they are spent. We will discuss the motivation and implications of the Brexit decision and various coordination problems with respect to public debt, taxation and environmental policy. Economic policy is discussed with simple models, which highlight the central problems.

Course contents:

1. The European Union: History and Institutions

2. The Budget of the European Union

3. Economic Analysis of the Brexit Process

4. Sovereign Debt, Financial Crisis and Fiscal Integration in the EMU

5. Tax Competition or Tax Coordination in Europe?

6. European Climate Policy: Emission Trading and Green Deal

Intended learning outcomes

After completing the course students are introduced to the central public finance policy issues, institutions and rules of conduct in the EU. They are able to apply simple theoretical models to to discuss and analyze more specific policy 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) portfolio (approx. 50 hours total)
Language of assessment: English
creditable for bonus

Allocation of places

There are no restrictions with regard to available places for students of the Master's degree programmes Business Management, International Economic Policy or Economics, Information Systems, Wirtschaftsmathematik (Mathematics for Economics) and Chinese and Economics as well as China Business and Economics. A total of 20 places will be allocated to students of other subjects; should the number of applications exceed the number of available places, these places will be allocated by lot.

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
keinem Studiengang zugeordnet

Module title			Abbreviation
International Economics 1			12-M-ATIÖ1-262-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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: English
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

keinem Studiengang zugeordnet

Module title	Abbreviation
Empirical International Trade	12-M-ETT-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

What are the effects of regional trade agreements? How effective is the World Trade Organization in fostering international trade flows? How strong are the responses to tariff changes, such as the ones implemented in the US-China trade war? These are some examples of questions tackled in empirical international trade. Empirical research in international trade is characterized by a tight link between economic theory and econometric specifications. The course will introduce the gravity model of international trade, which is the workhorse model in empirical trade research. Based on a theoretical derivation of the model, students will learn both how to estimate the corresponding structural econometric model and how to use the model to perform counterfactual policy analyses. Using the trade gravity expression as a starting point, closely related models for example for international migration, FDI flows, or carbon emissions embodied in international trade will also be considered.

Besides the lectures, the course will also contain computer exercises in which the students will implement the different estimations and simulations themselves. At the end of the term, students will write a term paper in which they perform their own empirical investigation of a trade policy measure.

Intended learning outcomes

- knowledge of key concepts in empirical international trade
- reproduction of theoretical and econometric arguments in the recent empirical trade literature
- implementation of econometric and general equilibrium analysis on the computer
- own empirical analysis

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

Allocation of places

20 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

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
keinem Studiengang zugeordnet

Module title			Abbreviation
Experimental Economics			12-M-EE-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Aim and outline of the course:

The Nobel Prizes for Daniel Kahneman and Vernon Smith 2002 and for Richard Thaler 2017 have underlined the increasing importance of experimental methods in economics. Experimental methods are used to collect data using randomization or a highly controlled environment. This course offers an introduction to the methodology of experimental economics and economic laboratory experiments.

In the methodology part it is shown why experiments are a good tool to generate scientific knowledge. Furthermore, widely used techniques in economic experiments are explained and how economic experiments differ from experiments in other social sciences. This part also deals with methods of reasoning, i.e. how inferences can be drawn from evidence that is generated by experiments.

The unifying theme of all laboratory experiments that will be covered is, understanding the behavior of agents, who produce and/or distribute goods by interacting with each other. The first topic is about markets and it includes experiments that shown under which conditions and institutions markets work very efficient and under which conditions and institutions they fail to yield a desirable outcome. The second topic includes experiments that look at the behavior of two agents, who bargain about the distribution of a common pie. On the basis of these results we will discuss experiments that try to explain bargaining behavior and show how agents deviate systematically from the neoclassical framework, i.e. the "homo oeconomicus". The third topic deals with cooperation and institutions that support cooperation in the long run as equilibrium. Further, systematic evidence will be presented on how individuals can be classified in different cooperative types and how these types can explain economic outcomes in natural environments. The forth topic concerns reciprocity, a strong determining factor of human behavior that is nearly universal. We will cover experiments that show how reciprocity can enforce relational contracts in the absence of third party enforcement. Moreover, there will be a special emphasis on how reciprocity affects labor markets.

When time permits up to two additional topics will be covered. The first topic is about gender differences in competitiveness, risk-aversion and overconfidence. The second topic is about the elicitation of social norms.

Prerequisites: Participants should have a basic knowledge about microeconomics, game theory and econometrics.

Literature:

The course will be mainly paper based but the following books provide a good overview and complement the discussed papers.

- Dhami, S. (2016). The Foundations of Behavioral Economic Analysis. Oxford University Press.
- Guala, F. (2005). The Methodology of Experimental Economics. Cambridge University Press

In addition lecture slides will be provided.

Intended learning outcomes

The aim of the course is to familiarize students with the methodology experimental economics. Further, students will be enabled to understand how causal evidence can be obtained using controlled variation and how to generalize from results that are derived in artificial laboratory setting to more natural environments. Moreover, the

course shall deepen students' understanding of human decision making in multi-agent settings and to make them aware of systematic heterogeneous human behavior in the production and distribution of goods.

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) 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

30 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

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

keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in International Economics			12-M-TIE-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

--

Additional information

--

Workload

150 h

Teaching cycle

Teaching cycle: after announcement

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

--

Module appears in

keinem Studiengang zugeordnet

Strategic Entrepreneurship

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Corporate Entrepreneurship and Innovation			12-M-UGF1-262-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) portfolio (approx. 50 hours total)
Language of assessment: English
creditable for bonus

Allocation of places
--
Additional information
--
Workload
150 h
Teaching cycle
Teaching cycle: winter semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
--
Module appears in
keinem Studiengang zugeordnet

Module title	Abbreviation
Corporate Strategy	12-M-UGF2-262-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) portfolio (approx. 50 hours total)
Language of assessment: English
creditable for bonus

Allocation of places
--
Additional information
--
Workload
150 h
Teaching cycle
Teaching cycle: winter semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
--
Module appears in
keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Entrepreneurship Fundamentals			12-M-EF-262-m01
Module coordinator		**Module offered by**	
--		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	--	--	

Contents

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Intended learning outcomes

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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) portfolio (approx. 50 hours total)
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

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

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Digital Entrepreneurship and Digital Transformation			12-M-UGF3-262-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) portfolio (approx. 50 hours total)
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)
--
Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
ZDI Accelerator Program			12-M-ZDI-262-m01
Module coordinator		**Module offered by**	
--		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	--	--	

Contents

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Intended learning outcomes

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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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

12 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

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

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Digital Strategy			12-M-IBS-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: English
creditable for bonus

Allocation of places

--

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

keinem Studiengang zugeordnet

Module title	Abbreviation
Project and Change Management	12-M-PROM-262-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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

--

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

keinem Studiengang zugeordnet

Module title			Abbreviation
Incentives in Organizations			12-M-AO-262-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

Based on the classical principal-agent theory, this course discusses methodological and empirical aspects of incentives in organisations. It uses contents from advanced text books and original (mainly empirical) research articles.

Outline of syllabus
1. Principal-agent theory
2. Do top managers earn too much? (application)
3. Performance-based payment
4. Implementation of performance-based payment in companies (application)
5. Seniority payment (with application)
6. Financial incentives to work after retirement (with application)
7. Wage bargaining (with application)
8. Efficiency wages (with case study)
9. Team incentives (with case study)

Literature
Milgrom and Roberts (1992), Economics, Organisation and Management, London.
Mishel and Sabadish (2013), CEO Pay in 2012 was extraordinarily high, EPI Issue Brief 367, Washington DC.
Fabbri and Marin (2016), What Explains the Rise in CEO Pay in Germany? A Panel Data Analysis for 1977-2009, Scandinavian Journal of Economics 118(2),235-263.Lazear (2000), Performance Pay and Productivity, American Economic Review 90, 1346-1361.
Lazear (1979), Why is there mandatoryretirement? Journal of Political Economy 87, 1261-1284. Hutchens (1989), Seniority, Wages and Productivity: A Turbulent Decade, Journal of Economic Perspectives 3 (4), 49-64.
Zwick (2011), ConsequencesofSeniorityWages on theEmploymentStructure, Industrial and Labor Relations Review 65(1), 108-125.
Lorenz and Zwick (2021), Money also issunny in a retiree´s world-financial incentives and work after retirement, Journal for Labour Market Research, 55 (21).
Bartolucci (2012), Credible Threats in a Wage Bargaining Model with on-the-job Search, Economic Letters, 117(3), 657-659.
Lukesch and Zwick (2023) Do outside options drive wage inequalities in retained jobs? Evidence from a natural experiment, British Journal of Industrial Relations, published online, https://doi.org/10.1111/bjir.12771.
Salop (1979), The model of the natural rate of unemployment, American Economic Review 69, 117–125.
Becker and Stigler (1974), Law enforcement, Malfeasance, andtheCompensationofEnforcers, Journal of Legal Studies III, 1-18.
Garibaldi (2006), Personnel Economics in Imperfect Labour Markets, Oxford University Press, Chapter 13.
Hjort (2014), Ethnic Divisions and Production in Firms, QuarterlyJournal of Economics, 1899-1946.
Kandel and Lazear (1992), Peer Pressure and Partnerships, Journal of Political Economy 100(4), 801817.

Intended learning outcomes

Students acquire a working knowledge of key incentive models models, selected empirical applications and the necessary econometric background. This enables them to identify the advantages and disadvantages of different incentive systems that are applied in the enterprise context, to make informed management analyses and to critically evaluate current controversies and developments as well as to conduct their own research.

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) portfolio (approx. 50 hours total) Language of assessment: English creditable for bonus
Allocation of places
--
Additional information
--
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
keinem Studiengang zugeordnet

Module title	Abbreviation
E-Commerce	12-M-EC1-262-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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Strategic Entrepreneurship			12-M-TSE-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Strategic Incentive Design

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Advanced Microeconomics			12-M-AM-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

In a nutshell, microeconomic theory considers the behavior of individual economic agents and builds from this foundation to a theory of aggregate economic outcomes, which then can be applied for conducting welfare analysis and giving policy advice. This lecture addresses the core building block of this thought complex: individual decision making and behavior. Specifically, students will come to understand in detail the standard models of riskless consumer choice, choice under risk and intertemporal choice and learn about the empirical challenges and limitations of these models.

Throughout the lecture, we will work with precise mathematical formalizations of the ideas that we want to think and talk about. In consequence, a solid understanding of the mathematical toolbox of standard microeconomics (e.g., differential calculus and constrained optimization; basic set theory; integration by parts) will be helpful as it will allow to focus on the underlying economic intuition. However, every required mathematical concept will be introduced and explained along the way, such that a strong interest in formal economic analysis is more important than an advanced mathematical background.

The exposition is primarily based on the standard graduate textbooks

- Mas-Colell, Whinston and Green (1995): "Microeconomic Theory"
- Jehle and Reny (2001): "Advanced Microeconomic Theory"

Intended learning outcomes

After completing the course students will be able to
- explain essential findings of microeconomic theory,
- apply the involved methods to given stylized examples on their own,
- recognize in which real life situations and how the results can be applied.

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

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
keinem Studiengang zugeordnet

Module title	Abbreviation
Contract Theory	12-M-CT-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

During the 1960/70s, microeconomic theory came to acknowledge that many (if not most) economic transactions are characterized by asymmetric distribution of information – i.e., at least one of the parties participating in a transaction usually is privy to information that the remaining parties do not have access to. This asymmetric distribution of information subsequently was recognized to be a major impediment for transactions to be economically efficient. Contract theory addresses the question how the inefficiencies arising from asymmetric distribution of information can best be mitigated by appropriate design of the contractual (or, more generally, institutional) framework that governs the transaction under consideration. This lecture covers the baseline models of "moral hazard" (i.e., situations where one party has private knowledge after a contract has been signed) and "adverse selection" (i.e., situations where one party has private knowledge before a contract is signed). As applications we will address questions discussed in organizational, personnel or industrial economics, such as incentive design within organizations or the design of labor law regulations and competition laws.

Even though we will work with precise mathematical formalizations of the ideas that we want to think and talk about, this course requires little more than a solid understanding of basic differential calculus. More important than having a solid mathematical background is having a strong interest in formal economic analysis and fun with logical thinking and puzzle solving.

The exposition is primarily based on the following textbook: Laffont and Martimort (2002): "The Theory of Incentives"

Intended learning outcomes

After completing the course students will be able to
- explain essential findings of contract theory,
- apply the involved methods to given stylized examples on their own,
- interpret the properties of real-life contracts as the outcome of the interaction between two or more contracting parties in the presence of asymmetric information,
- evaluate government interventions with regard to their effect on the efficiency properties of the interaction between the contracting parties.

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) portfolio (approx. 50 hours total)
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)
--
Module appears in
keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Strategic Decisions and Competition			12-M-SDC-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

1. Strategic situations and decision making

2. Analyzing strategic situations with game theory

1. Noncooperative simultaneous move games
2. Nash equilibrium
3. Models of oligopoly markets

3. Dynamic Games

1. Two(-multi) stage games and subgame perfect equilibrium
2. Role of commitment in dynamic situations
3. Models of advertising
4. Wage bargaining and unions

4. Repeated Games

1. Emergence of coordination in long interactions
2. Collusion between competing firms
3. Time consistent monetary policy

5. Static games of incomplete Information

1. Bayesian Nash equilibrium
2. Auctions

6. Dynamic games of incomplete information

1. Moral hazard and nonlinear pricing
2. Perfect Bayesian equilibrium
3. Signalling games
4. Job-market signalling
5. Corporate investment and capital structure

Intended learning outcomes

After successful completion of this class, the students should be familiar with economic models that can be used to shape managerial strategy and aid in making decisions in strategic situations. Especially, by making use of simple two stage games, they should be able to formulate dynamic policies in a wide variety of strategic situations. The students will acquire an intuitive understanding of the underlying economic mechanisms which emerge from the analysis of game theoretic models for a wide variety of strategic situations arising in industrial economics, marketing, organization, finance, trade and labor. Moreover, they will acquire skills which enable them to make predictions in strategic situations by making use of simple mathematical models. By means of completing case based exercises, they will learn to transform real life business situations to an appropriate economic model. Based on an analysis of this model, they will be able to devise optimal strategies and derive the corresponding managerial implications.

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) portfolio (approx. 50 hours total) Language of assessment: English creditable for bonus
Allocation of places
--
Additional information
--
Workload
150 h
Teaching cycle
Teaching cycle: winter semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
--
Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Behavioral Economics: Foundations			12-M-BEC-262-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

Behavioral economics refers to the field of research which, inspired by numerous documented deviations from the rational behavior assumed in neoclassical analysis, tries to improve the psychological realism of the idea of man in economics by incorporating insights from psychology into traditional economic analysis. In this course, students will become familiar with several of the most influential behavioral-economic theories of individual and strategic decision-making, which allow to explain a plethora of empirically documented deviations from the neoclassical model. These include departures from the assumptions of selfishness, time consistency, as well as rationality and rational expectations. The discussed behavioral-economic theories usually contain the neoclassical standard model as a special case and, therefore, are to be considered as extensions of rather than alternatives to the neoclassical model. While this lecture focuses on theories of individual decision-making, we will explore the implications of these theories also in the context of market settings and economic games. All necessary ideas and concepts will be introduced and discussed throughout the course. Nevertheless, as behavioral economics represents an extension of the neoclassical model, a solid understanding of the latter will be helpful. Consequently, students who completed advanced classes in microeconomics or game theory will most likely benefit most from this course.

While the exposition is primarily based on research articles, some topics of the lecture can be reviewed in the following textbooks:

- Dahmi (2016): "The Foundations of Behavioral Economic Analysis"
- Angner (2012): "A Course in Behavioral Economics"
- Wilkinson and Klaes (2012): "An Introduction to Behavioral Economics"
- Wakker (2010): "Prospect Theory for Risk and Ambiguity"

Intended learning outcomes

After completing the course students will be able to

- explain essential findings of behavioral economic theory,
- apply the involved methods to given stylized examples on their own,
- recognize in which real-life situations and how the results can be applied.

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

Allocation of places

--

Additional information

--

Workload
150 h
Teaching cycle
Teaching cycle: winter semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
--
Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Incentives in Organizations			12-M-AO-262-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

Based on the classical principal-agent theory, this course discusses methodological and empirical aspects of incentives in organisations. It uses contents from advanced text books and original (mainly empirical) research articles.

Outline of syllabus
1. Principal-agent theory
2. Do top managers earn too much? (application)
3. Performance-based payment
4. Implementation of performance-based payment in companies (application)
5. Seniority payment (with application)
6. Financial incentives to work after retirement (with application)
7. Wage bargaining (with application)
8. Efficiency wages (with case study)
9. Team incentives (with case study)

Literature
Milgrom and Roberts (1992), Economics, Organisation and Management, London.
Mishel and Sabadish (2013), CEO Pay in 2012 was extraordinarily high, EPI Issue Brief 367, Washington DC.
Fabbri and Marin (2016), What Explains the Rise in CEO Pay in Germany? A Panel Data Analysis for 1977-2009, Scandinavian Journal of Economics 118(2),235-263.Lazear (2000), Performance Pay and Productivity, American Economic Review 90, 1346-1361.
Lazear (1979), Why is there mandatoryretirement? Journal of Political Economy 87, 1261-1284. Hutchens (1989), Seniority, Wages and Productivity: A Turbulent Decade, Journal of Economic Perspectives 3 (4), 49-64.
Zwick (2011), ConsequencesofSeniorityWages on theEmploymentStructure, Industrial and Labor Relations Review 65(1), 108-125.
Lorenz and Zwick (2021), Money also issunny in a retiree´s world-financial incentives and work after retirement, Journal for Labour Market Research, 55 (21).
Bartolucci (2012), Credible Threats in a Wage Bargaining Model with on-the-job Search, Economic Letters, 117(3), 657-659.
Lukesch and Zwick (2023) Do outside options drive wage inequalities in retained jobs? Evidence from a natural experiment, British Journal of Industrial Relations, published online, https://doi.org/10.1111/bjir.12771.
Salop (1979), The model of the natural rate of unemployment, American Economic Review 69, 117–125.
Becker and Stigler (1974), Law enforcement, Malfeasance, andtheCompensationofEnforcers, Journal of Legal Studies III, 1-18.
Garibaldi (2006), Personnel Economics in Imperfect Labour Markets, Oxford University Press, Chapter 13.
Hjort (2014), Ethnic Divisions and Production in Firms, QuarterlyJournal of Economics, 1899-1946.
Kandel and Lazear (1992), Peer Pressure and Partnerships, Journal of Political Economy 100(4), 801817.

Intended learning outcomes

Students acquire a working knowledge of key incentive models models, selected empirical applications and the necessary econometric background. This enables them to identify the advantages and disadvantages of different incentive systems that are applied in the enterprise context, to make informed management analyses and to critically evaluate current controversies and developments as well as to conduct their own research.

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) portfolio (approx. 50 hours total) Language of assessment: English creditable for bonus
Allocation of places
--
Additional information
--
Workload
150 h
Teaching cycle
Teaching cycle: winter semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
--
Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Coordination, Budgeting and Incentives in Organizations			12-M-KOBO-262-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

This module focuses on accounting-based instruments to control behavior in decentralized enterprises. The course first discusses the role of accounting in the context of decision-making and behavioral controlling as well as informational analyses. Afterwards, the most common instruments of behavioral controlling (budgeting, value-oriented management, transfer prices) are discussed with regard to theory and practice.

Intended learning outcomes

Initially, students acquire an understanding of the necessity of behavioral control in enterprises. Upon completion of the course, they are able to analyze and evaluate requirements and effects of instruments used for behavioral control. Additionally, they develop competences for deployment, structure and development of coordination tools.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title	Abbreviation
Optimal Tax Theory	12-M-F4-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Description:
The course will discuss the design of an optimal tax system. First, students will learn what criteria have to be met for a tax system to be optimal. Lectures will introduce key rules for taxing commodities as well as income and capital.
Examining specific taxation issues such as eco-tax, family taxation and the taxation in an uncertain world, students will then gain more in-depth insights into these rules.
Reading: Lecture notes will be provided.

Outline of syllabus:
1. Optimal commodity taxation
2. Optimal income taxation
3. Optimal taxation of families

Intended learning outcomes

After completing this module students have a basic understanding of what is meant with "optimal taxation". They are able to apply this concept to specific normative questions of tax policy in practice. Students also learn to prepare and present short papers, where they discuss specific normative policy issues in groups.

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) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
European Competition Policy			12-M-WPE-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Outline of syllabus:
1. Legal environment, competition laws
2. Market definition
   - Qualitative methods
   - Simple quantitative methods
   - Hypothetical monopoly test
3. Horizontal agreements and collusion: repeated games and factors affecting likelihood of collusion
4. Horizontal mergers and collusion
   - Economic theory
   - Efficiency effects
   - Coordinated effects
5. Vertical relations and contracts
   - Economic analysis of contracts
   - "More economic approach"
6. Abuse of dominant position
   - Classification of abusive conduct
   - Economic analysis of abusive conduct and theory of harm

Intended learning outcomes

After completion of the module students can use the advanced concepts introduced in the lecture of competition policy, including the legal framework, the trace models and methods for the study of competition policy issues, as well as understand the approach of European competition policy in high profile cases. When they are confronted with practical problems, they can refer to these cases, and the same logic to practical examples apply by draining the relevant economic theories that identify variables to be measured and methodologies for assessing, and based on that adequate conclusions for appropriate cases. They will sufficiently understand the subject in order to open up that build upon literature in journals and being able to think critically.

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

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

Allocation of places

WM6:
There are no restrictions with regard to available places for students of the Master's degree programmes Management, International Economic Policy, Information Systems, Wirtschaftsmathematik (Mathematics for Economics) and Chinese and Economics as well as China Business and Economics. A total of 20 places will be allocated to students of other subjects; should the number of applications exceed the number of available places, these places will be allocated by lot.

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
keinem Studiengang zugeordnet

Module title			Abbreviation
Organizational Economics and Digital Transformation			12-M-OEDT-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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: after announcement

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

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Experimental Economics			12-M-EE-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Aim and outline of the course:

The Nobel Prizes for Daniel Kahneman and Vernon Smith 2002 and for Richard Thaler 2017 have underlined the increasing importance of experimental methods in economics. Experimental methods are used to collect data using randomization or a highly controlled environment. This course offers an introduction to the methodology of experimental economics and economic laboratory experiments.

In the methodology part it is shown why experiments are a good tool to generate scientific knowledge. Furthermore, widely used techniques in economic experiments are explained and how economic experiments differ from experiments in other social sciences. This part also deals with methods of reasoning, i.e. how inferences can be drawn from evidence that is generated by experiments.

The unifying theme of all laboratory experiments that will be covered is, understanding the behavior of agents, who produce and/or distribute goods by interacting with each other. The first topic is about markets and it includes experiments that shown under which conditions and institutions markets work very efficient and under which conditions and institutions they fail to yield a desirable outcome. The second topic includes experiments that look at the behavior of two agents, who bargain about the distribution of a common pie. On the basis of these results we will discuss experiments that try to explain bargaining behavior and show how agents deviate systematically from the neoclassical framework, i.e. the "homo oeconomicus". The third topic deals with cooperation and institutions that support cooperation in the long run as equilibrium. Further, systematic evidence will be presented on how individuals can be classified in different cooperative types and how these types can explain economic outcomes in natural environments. The forth topic concerns reciprocity, a strong determining factor of human behavior that is nearly universal. We will cover experiments that show how reciprocity can enforce relational contracts in the absence of third party enforcement. Moreover, there will be a special emphasis on how reciprocity affects labor markets.

When time permits up to two additional topics will be covered. The first topic is about gender differences in competitiveness, risk-aversion and overconfidence. The second topic is about the elicitation of social norms.

Prerequisites: Participants should have a basic knowledge about microeconomics, game theory and econometrics.

Literature:

The course will be mainly paper based but the following books provide a good overview and complement the discussed papers.

- Dhami, S. (2016). The Foundations of Behavioral Economic Analysis. Oxford University Press.
- Guala, F. (2005). The Methodology of Experimental Economics. Cambridge University Press

In addition lecture slides will be provided.

Intended learning outcomes

The aim of the course is to familiarize students with the methodology experimental economics. Further, students will be enabled to understand how causal evidence can be obtained using controlled variation and how to generalize from results that are derived in artificial laboratory setting to more natural environments. Moreover, the

course shall deepen students' understanding of human decision making in multi-agent settings and to make them aware of systematic heterogeneous human behavior in the production and distribution of goods.

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) 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

30 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

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

keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Strategic Incentive Design			12-M-TSID-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Managerial Accounting

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Coordination, Budgeting and Incentives in Organizations			12-M-KOBO-262-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

This module focuses on accounting-based instruments to control behavior in decentralized enterprises. The course first discusses the role of accounting in the context of decision-making and behavioral controlling as well as informational analyses. Afterwards, the most common instruments of behavioral controlling (budgeting, value-oriented management, transfer prices) are discussed with regard to theory and practice.

Intended learning outcomes

Initially, students acquire an understanding of the necessity of behavioral control in enterprises. Upon completion of the course, they are able to analyze and evaluate requirements and effects of instruments used for behavioral control. Additionally, they develop competences for deployment, structure and development of coordination tools.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Strategic Managerial Accounting			12-M-INST-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Incentives in Organizations			12-M-AO-262-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

Based on the classical principal-agent theory, this course discusses methodological and empirical aspects of incentives in organisations. It uses contents from advanced text books and original (mainly empirical) research articles.

Outline of syllabus
1. Principal-agent theory
2. Do top managers earn too much? (application)
3. Performance-based payment
4. Implementation of performance-based payment in companies (application)
5. Seniority payment (with application)
6. Financial incentives to work after retirement (with application)
7. Wage bargaining (with application)
8. Efficiency wages (with case study)
9. Team incentives (with case study)

Literature
Milgrom and Roberts (1992), Economics, Organisation and Management, London.
Mishel and Sabadish (2013), CEO Pay in 2012 was extraordinarily high, EPI Issue Brief 367, Washington DC.
Fabbri and Marin (2016), What Explains the Rise in CEO Pay in Germany? A Panel Data Analysis for 1977-2009, Scandinavian Journal of Economics 118(2),235-263.Lazear (2000), Performance Pay and Productivity, American Economic Review 90, 1346-1361.
Lazear (1979), Why is there mandatoryretirement? Journal of Political Economy 87, 1261-1284. Hutchens (1989), Seniority, Wages and Productivity: A Turbulent Decade, Journal of Economic Perspectives 3 (4), 49-64.
Zwick (2011), ConsequencesofSeniorityWages on theEmploymentStructure, Industrial and Labor Relations Review 65(1), 108-125.
Lorenz and Zwick (2021), Money also issunny in a retiree´s world-financial incentives and work after retirement, Journal for Labour Market Research, 55 (21).
Bartolucci (2012), Credible Threats in a Wage Bargaining Model with on-the-job Search, Economic Letters, 117(3), 657-659.
Lukesch and Zwick (2023) Do outside options drive wage inequalities in retained jobs? Evidence from a natural experiment, British Journal of Industrial Relations, published online, https://doi.org/10.1111/bjir.12771.
Salop (1979), The model of the natural rate of unemployment, American Economic Review 69, 117–125.
Becker and Stigler (1974), Law enforcement, Malfeasance, andtheCompensationofEnforcers, Journal of Legal Studies III, 1-18.
Garibaldi (2006), Personnel Economics in Imperfect Labour Markets, Oxford University Press, Chapter 13.
Hjort (2014), Ethnic Divisions and Production in Firms, QuarterlyJournal of Economics, 1899-1946.
Kandel and Lazear (1992), Peer Pressure and Partnerships, Journal of Political Economy 100(4), 801817.

Intended learning outcomes

Students acquire a working knowledge of key incentive models models, selected empirical applications and the necessary econometric background. This enables them to identify the advantages and disadvantages of different incentive systems that are applied in the enterprise context, to make informed management analyses and to critically evaluate current controversies and developments as well as to conduct their own research.

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) portfolio (approx. 50 hours total) 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
keinem Studiengang zugeordnet

Module title	Abbreviation
Project and Change Management	12-M-PROM-262-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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Accounting and Capital Markets			12-M-REKA-262-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 financial and management accounting, their functions, possible configurations as well as their impact on internal and external recipients under consideration of the institutional setting. In this context, an economic perspective has priority over detailed legal arrangements and regulations by the standard setters. Based on the theoretical foundations of information economics as well as decision-making and balance sheet theories, questions regarding cost accounting, management control systems, behavioral control and decision-making functions of accounting, quality of financial reporting, and publicity are discussed.

Intended learning outcomes

Initially, students acquire a fundamental knowledge of the conception and impact of management and financial accounting as information systems, as well as the economic impacts of the configuration of management and financial accounting. They understand analytical and empirical models from relevant research literature and can interpret and explain the results. Upon completion of the course, the students are able to assess and evaluate the impacts of changes in institutional general frameworks such as changes in valuation standards, publicity rules or regulations about the distribution of profits in enterprises and on capital markets.

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) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Decision Support Systems			12-M-DSS-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Group Accounting			12-M-GA-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

As businesses expand, the complexity of managing and reporting financial information across multiple subsidiaries and countries increases dramatically. Group accounting is crucial for companies operating on a large scale, as it involves consolidating diverse financial data into a single, cohesive set of financial statements that reflect the financial status of the entire corporation. This module covers the necessary knowledge to prepare and interpret consolidated financial statements under the International Financial Reporting Standards (IFRS). We will discuss the basic principles of group accounting and provide in-depth knowledge of the relevant standards. Students get to know the different types of mergers, acquisitions, and investments and the accounting methods needed to inform stakeholders about these activities. Students learn why consolidated financial statements are relevant and how the consolidation process works. In addition, we cover various recent topics in group accounting, e.g., the treatment of goodwill and why regulating it is becoming increasingly difficult.

Outline
- Economic principles of group accounting
- Scope of consolidation
- Preliminary measures
- Capital consolidation
- Debt consolidation
- Consolidation of revenues and expenses
- At-equity consolidation

Intended learning outcomes

Upon completion of this module, students will be able to:
- Explain the essential concepts and elements of group accounting;
- Prepare consolidated financial statements and solve relevant consolidation issues;
- Recognize the necessity of consolidated financial statements and critically evaluate consolidated financial statements.

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Financial Analysis			12-M-UA-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

In today's rapidly changing economic landscape, the ability to effectively analyze financial information is more critical than ever. Financial analysis is essential for interpreting past and current financial data to make predictions about future performance and guide strategic decisions that affect the overall business. This module offers students the tools and methodologies needed to evaluate the financial position of companies, assess investment opportunities, and make informed financial decisions. We provide a basic understanding of financial statement analysis, particularly on how to extract value-relevant information from financial statements, carry out financial statement analysis, and use financial data to value corporations.

Outline
- Introduction to financial analysis
- Analysis of earnings information
- Analysis of balance sheet information
- Analysis of cash flows
- Analysis of selected balance sheet positions

Intended learning outcomes

Upon completion of this module, students will be able to:
- Understand corporate financial statements and identify value-relevant information;
- Provide relevant valuation techniques and recognize the fundamental role of financial information in the valuation process;
- Apply valuation models to practical cases and make informed investment 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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Managerial Accounting			12-M-TMA-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Taxation

(20 ECTS credits)

Core

(10 ECTS credits)

Module title	Abbreviation
Tax Planning	12-M-SP-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This course deals with tax effects on fundamental economic decisions. Taxes are integrated into standard models for investment decisions, financing decisions, firm valuation, dividend policy and remuneration of employees. Therefore, the interaction of corporate and personal income taxes is analysed.

Part I
1. Introduction
2. The Influence of Taxes on Investment Decisions According to the "Standard Model"
3. Tax facts
4. Extensions of the Standard Model
5. Neutral profit taxation
6. Taxation and financing decisions
7. Tax planning for corporations
8. Taxation of Labor and Capital in Different Legal Forms

Part II
1. Taxation of cross border investments and tax reform

Intended learning outcomes

This course enables students to
(i) combine their knowledge of tax law with microeconomic analyses in the areas of corporate and personal finance;
(ii) analyze the effect of taxes on fundamental economic decisions, e.g. investment and financing decisions, evaluation of investment, financial assets, forms of remuneration for employees including managing and assessing;
(iii) read and discuss research and policy papers in the field of taxation.

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Tax Accounting			12-M-STB-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This module introduces the various methods of income recognition in the German Income Tax Code (*Einkommensteuergesetz*, EStG). It discusses the main reporting and valuation provisions as well as the specific problems and techniques of income calculation for partnerships.

Intended learning outcomes

Students have in-depth knowledge of tax accounting of companies and are able to solve moderate to complex problems of tax accounting in particular of sole proprietorships and partnerships using legal source.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Case Studies on Business Taxation			12-M-FER-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This module offers a cross-sectional view of business taxation by means of case studies which will be prepared by participants in advance and will be discussed in class. The focus will be on German income taxation, income calculation for tax purposes, taxation of partnerships as well as tax problems of foreign activities of German companies.

Intended learning outcomes

Students deepen their knowlegde of the German tax law. They are enabled to solve complex tax problems on their own.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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: winter semester

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

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Module appears in

keinem Studiengang zugeordnet

Module title	Abbreviation
International Taxation	12-M-IB-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The module discusses tax aspects (legal facts as well as economic effects) of cross-border business activities. Students become familiar with the principles of international taxation, relevant aspects of German income tax law, the function of double taxation treaties as well as recent developments of taxation within the European Union (mostly triggered by the Court of Justice of the European Union). The topics are introduced in the form of lectures. Complex case studies are used for an in-depth discussion of selected aspects.

Intended learning outcomes

After completion of the module students are able
(i) to assess tax issues of cross-border business activities and develop structured solutions;
(ii) to assess the economic effects of rules of international tax law on its own;
(iii) systematically apply double tax treaties.

The students have knowledge of the basics of international taxation and the German international tax law. They are able to judge and to analyze, using the relevant sources of law complex, case studies on the taxation of cross-border business activities independently and to develop design proposals for the solution.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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: 12.
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Tax-Optimized Business Organization			12-M-RFW-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This course deals with tax aspects of the choice and change of legal form of business activities. Static and dynamic models are used to calculate the effective tax burden from ongoing business activities but also from a-periodic measures like divestments, mergers, or changes of the legal form. Our perspective is that of an investor resident in Germany investing in incorporated and unincorporated businesses in Germany and abroad.

Intended learning outcomes

This course enables students to
(i) analyze and evaluate the tax effects of business activities in different legal forms from an investor's perspective;
(ii) calculate the tax burden from ongoing business activities in Germany and abroad;
(iii) calculate the tax burden from a-periodic events like divestments, purchases, mergers, and changes of legal form.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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: 12.
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Policy of Taxation			12-M-F1-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Description:
In this module, students will acquire a basic understanding of the tax system and structure applied to households in Germany. In addition, the course will include simple tax incidence analyses of specific tax policies. Reading: lecture notes provided by Chair.

Contents:
1. Fiscal harmonisation system in Germany
2. Mechanics and problems of the VAT system
3. Tax incidence analysis
4. Income tax code
5. Taxation of married couples and families
6. Taxation and household decisions

Intended learning outcomes

After completing the course "Tax Policy" students know the most important tax revenues in Germany and how they are divided between the Federation and the federal provinces. They are able to explain the incidence of specific taxes using simple case studies. Finally they can discuss tax induiced distortions of individual decisions using simple partial equilibrium models.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title	Abbreviation
Optimal Tax Theory	12-M-F4-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Description:
The course will discuss the design of an optimal tax system. First, students will learn what criteria have to be met for a tax system to be optimal. Lectures will introduce key rules for taxing commodities as well as income and capital.
Examining specific taxation issues such as eco-tax, family taxation and the taxation in an uncertain world, students will then gain more in-depth insights into these rules.
Reading: Lecture notes will be provided.

Outline of syllabus:
1. Optimal commodity taxation
2. Optimal income taxation
3. Optimal taxation of families

Intended learning outcomes

After completing this module students have a basic understanding of what is meant with "optimal taxation". They are able to apply this concept to specific normative questions of tax policy in practice. Students also learn to prepare and present short papers, where they discuss specific normative policy issues in groups.

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) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Group Accounting			12-M-GA-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

As businesses expand, the complexity of managing and reporting financial information across multiple subsidiaries and countries increases dramatically. Group accounting is crucial for companies operating on a large scale, as it involves consolidating diverse financial data into a single, cohesive set of financial statements that reflect the financial status of the entire corporation. This module covers the necessary knowledge to prepare and interpret consolidated financial statements under the International Financial Reporting Standards (IFRS). We will discuss the basic principles of group accounting and provide in-depth knowledge of the relevant standards. Students get to know the different types of mergers, acquisitions, and investments and the accounting methods needed to inform stakeholders about these activities. Students learn why consolidated financial statements are relevant and how the consolidation process works. In addition, we cover various recent topics in group accounting, e.g., the treatment of goodwill and why regulating it is becoming increasingly difficult.

Outline
- Economic principles of group accounting
- Scope of consolidation
- Preliminary measures
- Capital consolidation
- Debt consolidation
- Consolidation of revenues and expenses
- At-equity consolidation

Intended learning outcomes

Upon completion of this module, students will be able to:
- Explain the essential concepts and elements of group accounting;
- Prepare consolidated financial statements and solve relevant consolidation issues;
- Recognize the necessity of consolidated financial statements and critically evaluate consolidated financial statements.

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) portfolio (approx. 50 hours total)
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)
--
Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Advanced Financial Accounting			12-M-AFA-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Transparent reporting of large corporations and multinational enterprises are challenging for modern accounting systems. This module addresses recent developments in financial and non-financial accounting, ensuring that students are up-to-date with the current accounting landscape. It is designed for students who have a basic understanding of financial or non-financial accounting and seek to explore complex accounting issues in greater depth. Topics can vary depending on the current issues in practice or research. Former topics include accounting for financial instruments, revenue recognition, or the latest developments in sustainability reporting. The module is taught through a combination of lectures, exercises, and practical case studies. Guest lectures from industry experts are incorporated to provide real-world insights into advanced accounting practices.

Intended learning outcomes

By the end of this module, students will be able to:
- Solve and analyze complex financial and non-financial accounting tasks.
- Analyze and interpret reporting data to support decision-making in various business contexts.
- Stay informed and adapt to evolving accounting standards and practices.

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) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Accounting and Capital Markets			12-M-REKA-262-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 financial and management accounting, their functions, possible configurations as well as their impact on internal and external recipients under consideration of the institutional setting. In this context, an economic perspective has priority over detailed legal arrangements and regulations by the standard setters. Based on the theoretical foundations of information economics as well as decision-making and balance sheet theories, questions regarding cost accounting, management control systems, behavioral control and decision-making functions of accounting, quality of financial reporting, and publicity are discussed.

Intended learning outcomes

Initially, students acquire a fundamental knowledge of the conception and impact of management and financial accounting as information systems, as well as the economic impacts of the configuration of management and financial accounting. They understand analytical and empirical models from relevant research literature and can interpret and explain the results. Upon completion of the course, the students are able to assess and evaluate the impacts of changes in institutional general frameworks such as changes in valuation standards, publicity rules or regulations about the distribution of profits in enterprises and on capital markets.

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) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Taxation			12-M-TT-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Testimonials from tax experts			12-M-SEB-262-m01
Module coordinator		**Module offered by**	
--		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	--	--	

Contents

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Intended learning outcomes

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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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

--

Workload

150 h

Teaching cycle

--

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

--

Module appears in

keinem Studiengang zugeordnet

Managerial Accounting

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Group Accounting			12-M-GA-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

As businesses expand, the complexity of managing and reporting financial information across multiple subsidiaries and countries increases dramatically. Group accounting is crucial for companies operating on a large scale, as it involves consolidating diverse financial data into a single, cohesive set of financial statements that reflect the financial status of the entire corporation. This module covers the necessary knowledge to prepare and interpret consolidated financial statements under the International Financial Reporting Standards (IFRS). We will discuss the basic principles of group accounting and provide in-depth knowledge of the relevant standards. Students get to know the different types of mergers, acquisitions, and investments and the accounting methods needed to inform stakeholders about these activities. Students learn why consolidated financial statements are relevant and how the consolidation process works. In addition, we cover various recent topics in group accounting, e.g., the treatment of goodwill and why regulating it is becoming increasingly difficult.

Outline
- Economic principles of group accounting
- Scope of consolidation
- Preliminary measures
- Capital consolidation
- Debt consolidation
- Consolidation of revenues and expenses
- At-equity consolidation

Intended learning outcomes

Upon completion of this module, students will be able to:
- Explain the essential concepts and elements of group accounting;
- Prepare consolidated financial statements and solve relevant consolidation issues;
- Recognize the necessity of consolidated financial statements and critically evaluate consolidated financial statements.

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Financial Analysis			12-M-UA-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

In today's rapidly changing economic landscape, the ability to effectively analyze financial information is more critical than ever. Financial analysis is essential for interpreting past and current financial data to make predictions about future performance and guide strategic decisions that affect the overall business. This module offers students the tools and methodologies needed to evaluate the financial position of companies, assess investment opportunities, and make informed financial decisions. We provide a basic understanding of financial statement analysis, particularly on how to extract value-relevant information from financial statements, carry out financial statement analysis, and use financial data to value corporations.

Outline
- Introduction to financial analysis
- Analysis of earnings information
- Analysis of balance sheet information
- Analysis of cash flows
- Analysis of selected balance sheet positions

Intended learning outcomes

Upon completion of this module, students will be able to:
- Understand corporate financial statements and identify value-relevant information;
- Provide relevant valuation techniques and recognize the fundamental role of financial information in the valuation process;
- Apply valuation models to practical cases and make informed investment 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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: English
creditable for bonus

Allocation of places

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Additional information

--

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
keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title	Abbreviation
Advanced Financial Accounting	12-M-AFA-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Transparent reporting of large corporations and multinational enterprises are challenging for modern accounting systems. This module addresses recent developments in financial and non-financial accounting, ensuring that students are up-to-date with the current accounting landscape. It is designed for students who have a basic understanding of financial or non-financial accounting and seek to explore complex accounting issues in greater depth. Topics can vary depending on the current issues in practice or research. Former topics include accounting for financial instruments, revenue recognition, or the latest developments in sustainability reporting. The module is taught through a combination of lectures, exercises, and practical case studies. Guest lectures from industry experts are incorporated to provide real-world insights into advanced accounting practices.

Intended learning outcomes

By the end of this module, students will be able to:
- Solve and analyze complex financial and non-financial accounting tasks.
- Analyze and interpret reporting data to support decision-making in various business contexts.
- Stay informed and adapt to evolving accounting standards and practices.

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) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Accounting and Capital Markets			12-M-REKA-262-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 financial and management accounting, their functions, possible configurations as well as their impact on internal and external recipients under consideration of the institutional setting. In this context, an economic perspective has priority over detailed legal arrangements and regulations by the standard setters. Based on the theoretical foundations of information economics as well as decision-making and balance sheet theories, questions regarding cost accounting, management control systems, behavioral control and decision-making functions of accounting, quality of financial reporting, and publicity are discussed.

Intended learning outcomes

Initially, students acquire a fundamental knowledge of the conception and impact of management and financial accounting as information systems, as well as the economic impacts of the configuration of management and financial accounting. They understand analytical and empirical models from relevant research literature and can interpret and explain the results. Upon completion of the course, the students are able to assess and evaluate the impacts of changes in institutional general frameworks such as changes in valuation standards, publicity rules or regulations about the distribution of profits in enterprises and on capital markets.

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) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Portfolio and Capital Market Theory			12-M-CF2-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This module conveys profound knowledge of individual portfolio choices and on this basis the most important capital market theory (namely capital asset pricing model) is introduced, including its assumptions, implications and extensions. Syllabus:

1. Modern Portfolio Selection
   1. 2 Asset-Case
   2. Multiple-Asset-Case
   3. Critique of Portfolio Theory
2. Capital Asset Pricing Model
   1. Assumptions and Derivation
   2. Implications
3. Empirical Aspects, Extensions and Alternatives

Intended learning outcomes

This module enables the students
(i) to explain and to determine the optimal capital market position of an investor given the different investment opportunities and individual utility function;
(ii) to understand and use the central CAPM propositions for valuating risky assets.

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) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Tax Accounting			12-M-STB-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

This module introduces the various methods of income recognition in the German Income Tax Code (*Einkommensteuergesetz*, EStG). It discusses the main reporting and valuation provisions as well as the specific problems and techniques of income calculation for partnerships.

Intended learning outcomes

Students have in-depth knowledge of tax accounting of companies and are able to solve moderate to complex problems of tax accounting in particular of sole proprietorships and partnerships using legal source.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title	Abbreviation
Tax Planning	12-M-SP-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This course deals with tax effects on fundamental economic decisions. Taxes are integrated into standard models for investment decisions, financing decisions, firm valuation, dividend policy and remuneration of employees. Therefore, the interaction of corporate and personal income taxes is analysed.

Part I
1. Introduction
2. The Influence of Taxes on Investment Decisions According to the "Standard Model"
3. Tax facts
4. Extensions of the Standard Model
5. Neutral profit taxation
6. Taxation and financing decisions
7. Tax planning for corporations
8. Taxation of Labor and Capital in Different Legal Forms

Part II
1. Taxation of cross border investments and tax reform

Intended learning outcomes

This course enables students to
(i) combine their knowledge of tax law with microeconomic analyses in the areas of corporate and personal finance;
(ii) analyze the effect of taxes on fundamental economic decisions, e.g. investment and financing decisions, evaluation of investment, financial assets, forms of remuneration for employees including managing and assessing;
(iii) read and discuss research and policy papers in the field of taxation.

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Coordination, Budgeting and Incentives in Organizations			12-M-KOBO-262-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

This module focuses on accounting-based instruments to control behavior in decentralized enterprises. The course first discusses the role of accounting in the context of decision-making and behavioral controlling as well as informational analyses. Afterwards, the most common instruments of behavioral controlling (budgeting, value-oriented management, transfer prices) are discussed with regard to theory and practice.

Intended learning outcomes

Initially, students acquire an understanding of the necessity of behavioral control in enterprises. Upon completion of the course, they are able to analyze and evaluate requirements and effects of instruments used for behavioral control. Additionally, they develop competences for deployment, structure and development of coordination tools.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Sustainability Reporting and AI			12-M-SR-262-m01
Module coordinator		**Module offered by**	
--		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	--	--	

Contents

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Intended learning outcomes

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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 120 minutes) or
b) portfolio (approx. 50 hours total)
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

Number of places: 10.
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

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

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Module appears in

keinem Studiengang zugeordnet

Module title	Abbreviation
Research in Finance & Accounting	12-M-SC-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Research and research skills are foundational to driving business success in a world where information is abundant and constantly evolving. They provide businesses and professionals with the tools needed to navigate complexity, innovate effectively, and compete on a global scale. In today's data-driven landscape, businesses rely on thorough research to make informed decisions. Research skills enable professionals to gather, analyze, and interpret data effectively, ensuring that decisions are based on solid evidence rather than intuition. Moreover, the modern business environment is characterized by rapid change. Continuous learning, facilitated by strong research skills, helps individuals and organizations remain adaptable. These skills enable professionals to keep up with industry developments, technological advancements, and shifts in consumer behavior, ensuring that they are always equipped to respond to new challenges and opportunities. This module is designed to equip students with the skills necessary to conduct rigorous empirical research.

Outline
- Introduction to current research
- How to develop a research question
- How to conduct research
- Introduction to various data sources
- Introduction to applied research methods
- Visualizing research findings

Intended learning outcomes

Upon completion of this module, students will be able to:
- Identify and motivate a relevant research question;
- Find relevant scientific literature and interpret it with regard to a specific research question;
- Address a research question using empirical analyses.

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) portfolio (approx. 50 hours total)
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: after announcement
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Accounting			12-M-TA-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Enterprise Systems

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Business Software 1: Management and Implementation of Information Systems			12-M-GPU-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: German and/or English
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Business Software 2: Data-driven Business Process Management and Automation			12-M-ERP-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: German and/or English
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
keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Professional Project Management			10-I=PM-252-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, IN

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

Supplementary course Supplementary course Entrepreneurship into Action (ZENTRIA) (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
Project - Current Topics in Computer Science			10-I=PRJAK-252-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, SEC, IN

Workload

150 h

Teaching cycle

Teaching cycle: every semester

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

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Module appears in

Supplementary course Supplementary course Entrepreneurship into Action (ZENTRIA) (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)

Module title			Abbreviation
Human Resource Management and Industrial Relations			12-M-HRM-262-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 to 120 minutes) or b) portfolio (approx. 50 hours total) Language of assessment: English creditable for bonus
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
keinem Studiengang zugeordnet

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

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) 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
Entrepreneurship in Software-Ecosystems: Start & Scale Up, Venture Capital, Private Equity, EXIT	12-M-ESE-262-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 to 120 minutes) or
b)portfolio (approx. 50 hours total)

Language of assessment: German and/or English
creditable for bonus

Allocation of places

50 places (max. 10 places will be allocated to students of the supplementary course ZENTRIA)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Enterprise Systems			12-M-TES-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Business Analytics

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Decision Support Systems			12-M-DSS-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Analytical Information Systems			12-M-BI-262-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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title	Abbreviation
Policy and Management Evaluation Methods	12-M-PEM-262-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 offers an introduction to the fundamentals of causal inference and to widely used research designs in the social sciences. In the first part a framework for understanding causality is introduced. Specifically, the epistemological differences between association, intervention and counterfactuals are explained. Then it is shown why experiments are paramount in generating causal knowledge and which assumptions are needed for which level of the causal hierarchy. Finally, we will discuss two widely used approaches to causality in the social sciences, i.e. potential outcomes and directed acyclic graphs.

The second part is devoted to the research designs regressions analysis, difference-in-differences, instrumental variables, and regression discontinuity. The emphasis is how these research designs are for example applied to answer important questions in labour economics such as the effects of a minimum wage increase on employment or the effect of children on female labour supply and wages.

The assumptions each research design requires in order to identify a causal effect will be at center stage of the lecture. Therefore the emphasis is to teach students *what* one needs to estimate in order to answer a given question. Further, the research designs are discussed such that students will be able to evaluate and apply these research designs to other questions and fields.

Intended learning outcomes

At the end of the course, students should be able to understand basic concepts and methods of causal inference, as well as read, interpret, and assess the credibility of scientific publications. In addition, the course serves as preparation for advanced statistics and econometrics 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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Advanced Operations & Logistics Management			12-M-AOLM-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title	Abbreviation
Enterprise AI	12-M-EAI-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

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-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Practical Data Science			12-M-ATDS-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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.
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
keinem Studiengang zugeordnet

Module title	Abbreviation
Applied Topics in Data Science in Business and Economics	12-M-TE-262-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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

24 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

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

keinem Studiengang zugeordnet

Module title			Abbreviation
Applied Data Analysis and Machine Learning			12-M-TDS-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Organizational Economics and Digital Transformation			12-M-OEDT-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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: after announcement

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

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Optimization in Practice			12-M-OIP-262-m01
Module coordinator		**Module offered by**	
--		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	--	--	

Contents

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Intended learning outcomes

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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) portfolio (approx. 50 hours total)
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

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

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Experimental Economics			12-M-EE-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Aim and outline of the course:

The Nobel Prizes for Daniel Kahneman and Vernon Smith 2002 and for Richard Thaler 2017 have underlined the increasing importance of experimental methods in economics. Experimental methods are used to collect data using randomization or a highly controlled environment. This course offers an introduction to the methodology of experimental economics and economic laboratory experiments.

In the methodology part it is shown why experiments are a good tool to generate scientific knowledge. Furthermore, widely used techniques in economic experiments are explained and how economic experiments differ from experiments in other social sciences. This part also deals with methods of reasoning, i.e. how inferences can be drawn from evidence that is generated by experiments.

The unifying theme of all laboratory experiments that will be covered is, understanding the behavior of agents, who produce and/or distribute goods by interacting with each other. The first topic is about markets and it includes experiments that shown under which conditions and institutions markets work very efficient and under which conditions and institutions they fail to yield a desirable outcome. The second topic includes experiments that look at the behavior of two agents, who bargain about the distribution of a common pie. On the basis of these results we will discuss experiments that try to explain bargaining behavior and show how agents deviate systematically from the neoclassical framework, i.e. the "homo oeconomicus". The third topic deals with cooperation and institutions that support cooperation in the long run as equilibrium. Further, systematic evidence will be presented on how individuals can be classified in different cooperative types and how these types can explain economic outcomes in natural environments. The forth topic concerns reciprocity, a strong determining factor of human behavior that is nearly universal. We will cover experiments that show how reciprocity can enforce relational contracts in the absence of third party enforcement. Moreover, there will be a special emphasis on how reciprocity affects labor markets.

When time permits up to two additional topics will be covered. The first topic is about gender differences in competitiveness, risk-aversion and overconfidence. The second topic is about the elicitation of social norms.

Prerequisites: Participants should have a basic knowledge about microeconomics, game theory and econometrics.

Literature:

The course will be mainly paper based but the following books provide a good overview and complement the discussed papers.

- Dhami, S. (2016). The Foundations of Behavioral Economic Analysis. Oxford University Press.
- Guala, F. (2005). The Methodology of Experimental Economics. Cambridge University Press

In addition lecture slides will be provided.

Intended learning outcomes

The aim of the course is to familiarize students with the methodology experimental economics. Further, students will be enabled to understand how causal evidence can be obtained using controlled variation and how to generalize from results that are derived in artificial laboratory setting to more natural environments. Moreover, the

course shall deepen students' understanding of human decision making in multi-agent settings and to make them aware of systematic heterogeneous human behavior in the production and distribution of goods.

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) 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

30 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

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

keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Business Analytics			12-M-TBA-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Electronic Business

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Digital Strategy			12-M-IBS-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Mobile and Ubiquitous Business			12-M-MUS-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title	Abbreviation
Digital Entrepreneurship and Digital Transformation	12-M-UGF3-262-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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Corporate Entrepreneurship and Innovation			12-M-UGF1-262-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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Corporate Strategy			12-M-UGF2-262-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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Strategic Management of Global Supply Chains			12-M-SMGS-262-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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title	Abbreviation
Entrepreneurship in Software-Ecosystems: Start & Scale Up, Venture Capital, Private Equity, EXIT	12-M-ESE-262-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 to 120 minutes) or
b)portfolio (approx. 50 hours total)

Language of assessment: German and/or English
creditable for bonus

Allocation of places

50 places (max. 10 places will be allocated to students of the supplementary course ZENTRIA)
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

keinem Studiengang zugeordnet

Module title	Abbreviation
Product Innovation and Price Management	12-M-PIPM-262-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

"Product Innovation and Price Management" explores the crucial aspects of developing innovative products and effectively managing pricing strategies in dynamic markets. Students will examine theories and practices related to product innovation, market analysis, and pricing methodologies.

Rough course structure:

Innovation management
- Fundamentals of innovation management
- Idea generation & idea concretization
- Concept definition
- Concept evaluation and selection
- Market launch of new products
- Cross-phase approaches to managing the innovation process

Price management

- Basics of price management
- Concepts of classical price theory
- Behavioral basics of pricing policy
- Approaches to price determination (demand-oriented, cost-oriented, competition-oriented)

Intended learning outcomes

The goal of this course is to equip students with the knowledge and skills necessary to drive innovation in product development and effectively manage pricing strategies in dynamic markets.

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title	Abbreviation
Business Communication in Print, Online and Social Media	12-M-ECC-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

This module focuses on the relationship of offer characteristics with benefit aspects for the end consumer and the business models on the part of the providers. Starting from the basics of editorial work and professional text management, the new forms of communication management in social networks are presented. The focus of the lecture is on the use of social media in campaigns (Facebook, Twitter, Instagram, Tiktok). There will also be exercises on various Web 2.0 applications (e.g. online social networks) and on the collection and interpretation of online market research data. Crisis communication of companies will also be covered – in particular opinion-makers on the web as well as protest culture on the web.

Intended learning outcomes

By participating in the module courses, students acquire job-specific skills in research and interviewing. Students are able to collect and organize information according to criteria of topicality and relevance. In addition, students are taught journalistic expertise so that they are able to recognize the forms of presentation of news, reports, and background reports with their media characteristics and communicative functions in different media genres and create them themselves. Students will be able to prototype and design a social media campaign, describe the editorial and technical approach including feedback, response, and customer engagement. In addition, students will be able to design counter-strategies for corporate communication crises.

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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Strategic Managerial Accounting			12-M-INST-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Electronic Business			12-M-TEB-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Artificial Intelligence

(20 ECTS credits)

Core

(10 ECTS credits)

Module title	Abbreviation
Enterprise AI	12-M-EAI-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Practical Data Science			12-M-ATDS-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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.
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
keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Analytical Information Systems			12-M-BI-262-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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

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
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

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) 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)

Module title	Abbreviation
Marketing Analytics	12-M-MA-262-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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

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
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) 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

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 (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
Topics in Artificial Intelligence			12-M-TAI-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Data Science in Decision-Making

(20 ECTS credits)

Core

(10 ECTS credits)

Module title			Abbreviation
Analytical Information Systems			12-M-BI-262-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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title	Abbreviation
Policy and Management Evaluation Methods	12-M-PEM-262-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 offers an introduction to the fundamentals of causal inference and to widely used research designs in the social sciences. In the first part a framework for understanding causality is introduced. Specifically, the epistemological differences between association, intervention and counterfactuals are explained. Then it is shown why experiments are paramount in generating causal knowledge and which assumptions are needed for which level of the causal hierarchy. Finally, we will discuss two widely used approaches to causality in the social sciences, i.e. potential outcomes and directed acyclic graphs.

The second part is devoted to the research designs regressions analysis, difference-in-differences, instrumental variables, and regression discontinuity. The emphasis is how these research designs are for example applied to answer important questions in labour economics such as the effects of a minimum wage increase on employment or the effect of children on female labour supply and wages.

The assumptions each research design requires in order to identify a causal effect will be at center stage of the lecture. Therefore the emphasis is to teach students *what* one needs to estimate in order to answer a given question. Further, the research designs are discussed such that students will be able to evaluate and apply these research designs to other questions and fields.

Intended learning outcomes

At the end of the course, students should be able to understand basic concepts and methods of causal inference, as well as read, interpret, and assess the credibility of scientific publications. In addition, the course serves as preparation for advanced statistics and econometrics 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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Decision Support Systems			12-M-DSS-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: English
creditable for bonus

Allocation of places

--

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

keinem Studiengang zugeordnet

Module title	Abbreviation
Applied Topics in Data Science in Business and Economics	12-M-TE-262-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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

24 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

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

keinem Studiengang zugeordnet

Module title			Abbreviation
Organizational Economics and Digital Transformation			12-M-OEDT-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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: after announcement

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

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Applied Data Analysis and Machine Learning			12-M-TDS-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Module title			Abbreviation
Econometrics 1			12-M-OE1-262-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)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Description:
This module deals with the basic concept and methodology of the ordinary least squares (OLS) regression model. In particular, model assumptions and properties are discussed and formally motivated. In addition, the module examines linear restrictions on the model's explanatory variables as well as dummy variables and introduces tests to verify simple and multiple linear restrictions.

Linear algebra is used as formal aid.

Outline of syllabus:
1. Random variables
2. Important distributions
3. Point estimates
4. Simple linear regression model
5. Model assumptions
6. Model properties
7. Simple hypothesis tests
8. Multiple linear regression model
9. Linear restrictions
10. Dummy variables
11. Multiple hypothesis tests

Intended learning outcomes

The students acquire knowledge of the basics, concepts and methods used in the classical linear regression model and understand the role of econometrics in science and data analysis. In particular, they learn how to analytically derive, calculate and interpret the coefficients, standard errors and p-values of a classic regression output of the multiple regression model. Furthermore, they are able to formally state and motivate the assumptions and properties of OLS and know how to deal with transformed and dummy variables. Additionally, students will be able to test multiple linear restrictions on the parameters and will be able to apply these tests to real economic, business and social science questions.
The competences acquired in this course serve as a prerequisite for "Econometrics II", "Econometrics III", "Microeconometrics" und "Financial Econometrics".

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title	Abbreviation
Marketing Analytics	12-M-MA-262-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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Optimization in Practice			12-M-OIP-262-m01
Module coordinator		**Module offered by**	
--		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	--	--	

Contents

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Intended learning outcomes

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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) portfolio (approx. 50 hours total)
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

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

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Experimental Economics			12-M-EE-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Aim and outline of the course:

The Nobel Prizes for Daniel Kahneman and Vernon Smith 2002 and for Richard Thaler 2017 have underlined the increasing importance of experimental methods in economics. Experimental methods are used to collect data using randomization or a highly controlled environment. This course offers an introduction to the methodology of experimental economics and economic laboratory experiments.

In the methodology part it is shown why experiments are a good tool to generate scientific knowledge. Furthermore, widely used techniques in economic experiments are explained and how economic experiments differ from experiments in other social sciences. This part also deals with methods of reasoning, i.e. how inferences can be drawn from evidence that is generated by experiments.

The unifying theme of all laboratory experiments that will be covered is, understanding the behavior of agents, who produce and/or distribute goods by interacting with each other. The first topic is about markets and it includes experiments that shown under which conditions and institutions markets work very efficient and under which conditions and institutions they fail to yield a desirable outcome. The second topic includes experiments that look at the behavior of two agents, who bargain about the distribution of a common pie. On the basis of these results we will discuss experiments that try to explain bargaining behavior and show how agents deviate systematically from the neoclassical framework, i.e. the "homo oeconomicus". The third topic deals with cooperation and institutions that support cooperation in the long run as equilibrium. Further, systematic evidence will be presented on how individuals can be classified in different cooperative types and how these types can explain economic outcomes in natural environments. The forth topic concerns reciprocity, a strong determining factor of human behavior that is nearly universal. We will cover experiments that show how reciprocity can enforce relational contracts in the absence of third party enforcement. Moreover, there will be a special emphasis on how reciprocity affects labor markets.

When time permits up to two additional topics will be covered. The first topic is about gender differences in competitiveness, risk-aversion and overconfidence. The second topic is about the elicitation of social norms.

Prerequisites: Participants should have a basic knowledge about microeconomics, game theory and econometrics.

Literature:

The course will be mainly paper based but the following books provide a good overview and complement the discussed papers.

- Dhami, S. (2016). The Foundations of Behavioral Economic Analysis. Oxford University Press.
- Guala, F. (2005). The Methodology of Experimental Economics. Cambridge University Press

In addition lecture slides will be provided.

Intended learning outcomes

The aim of the course is to familiarize students with the methodology experimental economics. Further, students will be enabled to understand how causal evidence can be obtained using controlled variation and how to generalize from results that are derived in artificial laboratory setting to more natural environments. Moreover, the

course shall deepen students' understanding of human decision making in multi-agent settings and to make them aware of systematic heterogeneous human behavior in the production and distribution of goods.

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) 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

30 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

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

keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Data Science in Decision-Making			12-M-TDSDM-262-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 120 minutes) or
b) portfolio (approx. 50 hours total)
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

keinem Studiengang zugeordnet

Behavioral Economics and Evidence-Based Management

(20 ECTS credits)

Core

(10 ECTS credits)

Module title	Abbreviation
Policy and Management Evaluation Methods	12-M-PEM-262-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 offers an introduction to the fundamentals of causal inference and to widely used research designs in the social sciences. In the first part a framework for understanding causality is introduced. Specifically, the epistemological differences between association, intervention and counterfactuals are explained. Then it is shown why experiments are paramount in generating causal knowledge and which assumptions are needed for which level of the causal hierarchy. Finally, we will discuss two widely used approaches to causality in the social sciences, i.e. potential outcomes and directed acyclic graphs.

The second part is devoted to the research designs regressions analysis, difference-in-differences, instrumental variables, and regression discontinuity. The emphasis is how these research designs are for example applied to answer important questions in labour economics such as the effects of a minimum wage increase on employment or the effect of children on female labour supply and wages.

The assumptions each research design requires in order to identify a causal effect will be at center stage of the lecture. Therefore the emphasis is to teach students *what* one needs to estimate in order to answer a given question. Further, the research designs are discussed such that students will be able to evaluate and apply these research designs to other questions and fields.

Intended learning outcomes

At the end of the course, students should be able to understand basic concepts and methods of causal inference, as well as read, interpret, and assess the credibility of scientific publications. In addition, the course serves as preparation for advanced statistics and econometrics 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)

a) written examination (approx. 60 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Module title			Abbreviation
Behavioral Economics: Foundations			12-M-BEC-262-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

Behavioral economics refers to the field of research which, inspired by numerous documented deviations from the rational behavior assumed in neoclassical analysis, tries to improve the psychological realism of the idea of man in economics by incorporating insights from psychology into traditional economic analysis. In this course, students will become familiar with several of the most influential behavioral-economic theories of individual and strategic decision-making, which allow to explain a plethora of empirically documented deviations from the neoclassical model. These include departures from the assumptions of selfishness, time consistency, as well as rationality and rational expectations. The discussed behavioral-economic theories usually contain the neoclassical standard model as a special case and, therefore, are to be considered as extensions of rather than alternatives to the neoclassical model. While this lecture focuses on theories of individual decision-making, we will explore the implications of these theories also in the context of market settings and economic games. All necessary ideas and concepts will be introduced and discussed throughout the course. Nevertheless, as behavioral economics represents an extension of the neoclassical model, a solid understanding of the latter will be helpful. Consequently, students who completed advanced classes in microeconomics or game theory will most likely benefit most from this course.

While the exposition is primarily based on research articles, some topics of the lecture can be reviewed in the following textbooks:

- Dahmi (2016): "The Foundations of Behavioral Economic Analysis"
- Angner (2012): "A Course in Behavioral Economics"
- Wilkinson and Klaes (2012): "An Introduction to Behavioral Economics"
- Wakker (2010): "Prospect Theory for Risk and Ambiguity"

Intended learning outcomes

After completing the course students will be able to

- explain essential findings of behavioral economic theory,
- apply the involved methods to given stylized examples on their own,
- recognize in which real-life situations and how the results can be applied.

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) portfolio (approx. 50 hours total)
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
keinem Studiengang zugeordnet

Core Electives

(10 ECTS credits)

Module title			Abbreviation
Experimental Economics			12-M-EE-262-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)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Aim and outline of the course:

The Nobel Prizes for Daniel Kahneman and Vernon Smith 2002 and for Richard Thaler 2017 have underlined the increasing importance of experimental methods in economics. Experimental methods are used to collect data using randomization or a highly controlled environment. This course offers an introduction to the methodology of experimental economics and economic laboratory experiments.

In the methodology part it is shown why experiments are a good tool to generate scientific knowledge. Furthermore, widely used techniques in economic experiments are explained and how economic experiments differ from experiments in other social sciences. This part also deals with methods of reasoning, i.e. how inferences can be drawn from evidence that is generated by experiments.

The unifying theme of all laboratory experiments that will be covered is, understanding the behavior of agents, who produce and/or distribute goods by interacting with each other. The first topic is about markets and it includes experiments that shown under which conditions and institutions markets work very efficient and under which conditions and institutions they fail to yield a desirable outcome. The second topic includes experiments that look at the behavior of two agents, who bargain about the distribution of a common pie. On the basis of these results we will discuss experiments that try to explain bargaining behavior and show how agents deviate systematically from the neoclassical framework, i.e. the "homo oeconomicus". The third topic deals with cooperation and institutions that support cooperation in the long run as equilibrium. Further, systematic evidence will be presented on how individuals can be classified in different cooperative types and how these types can explain economic outcomes in natural environments. The forth topic concerns reciprocity, a strong determining factor of human behavior that is nearly universal. We will cover experiments that show how reciprocity can enforce relational contracts in the absence of third party enforcement. Moreover, there will be a special emphasis on how reciprocity affects labor markets.

When time permits up to two additional topics will be covered. The first topic is about gender differences in competitiveness, risk-aversion and overconfidence. The second topic is about the elicitation of social norms.

Prerequisites: Participants should have a basic knowledge about microeconomics, game theory and econometrics.

Literature:

The course will be mainly paper based but the following books provide a good overview and complement the discussed papers.

- Dhami, S. (2016). The Foundations of Behavioral Economic Analysis. Oxford University Press.
- Guala, F. (2005). The Methodology of Experimental Economics. Cambridge University Press

In addition lecture slides will be provided.

Intended learning outcomes

The aim of the course is to familiarize students with the methodology experimental economics. Further, students will be enabled to understand how causal evidence can be obtained using controlled variation and how to generalize from results that are derived in artificial laboratory setting to more natural environments. Moreover, the

course shall deepen students' understanding of human decision making in multi-agent settings and to make them aware of systematic heterogeneous human behavior in the production and distribution of goods.

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) 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

30 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

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

keinem Studiengang zugeordnet

Module title			Abbreviation
Applied Data Analysis and Machine Learning			12-M-TDS-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
Language of assessment: English
Assessment offered: In the semester in which the course is offered
creditable for bonus

Allocation of places

--

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)

--

Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Organizational Economics and Digital Transformation			12-M-OEDT-262-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 to 120 minutes) or
b) portfolio (approx. 50 hours total)
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: after announcement

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

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Behavioral Economics: Applications			12-M-BEA-262-m01
Module coordinator		**Module offered by**	
--		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	--	--	

Contents

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Intended learning outcomes

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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) portfolio (approx. 50 hours total)
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

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

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Topics in Behavioral Economics and Evidence-Based Management			12-M-TBE-262-m01
Module coordinator		**Module offered by**	
--		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	--	--	

Contents

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Intended learning outcomes

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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 120 minutes) or
b) portfolio (approx. 150 hours total)
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

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

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Module appears in

keinem Studiengang zugeordnet

Interdisciplinary Seminars and Workshops

(10 ECTS credits)

Module title	Abbreviation
Research in Groups - Dynamical Systems and Control Theory	10-M=GDSC-242-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Selected modern topics in dynamical systems and control theory.

Recommended previous knowledge:
Knowledge of the contents of the module "Mathematical Control Theory" or "Control Theory" is required.

Intended learning outcomes

The student gains insight into contemporary research problems in dynamical systems and control theory. He/She masters advanced techniques in this field and can apply them to complex problems.

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

V (2) + 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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Workload

300 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) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Research in Groups - Measure and Integral	10-M=GMAI-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Aspects of measure and integration theory: sigma algebras and Borel sets, volume and measure, measurable functions and Lebesgue integrals, selected applications, e. g. product measures (with Fubini's theorem and the transformation rule), Lp spaces and absolute continuity, measures on topological spaces.

Intended learning outcomes

The student gains insight into contemporary research problems in measure and integration theory. He/She masters advanced techniques in this field and can apply them to complex problems.

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

V (2) + 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Economathematics (2025)

Module title	Abbreviation
Research in Groups - Numerical Mathematics and Applied Analysis	10-M=GNMA-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Selected topics in numerical mathematics, applied analysis or scientific computing.

Recommended previous knowledge:
Depending on the content, basic and advanced knowledge from different areas of analysis and/or numerical mathematics is required. In case of doubt, it is recommended to consult the lecturer.

Intended learning outcomes

The student gains insight into a contemporary research problems in numerical mathematics or applied analysis. He/She masters advanced techniques in this field and can apply them to complex problems.

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

V (2) + 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

--

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

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Module appears in

Master's degree (1 major) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Research in Groups - Robotics, Optimization and Control Theory	10-M=GROC-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Selected modern topics in robotics, optimisation and control theory.

Recommended previous knowledge:
Knowledge of the contents of the module "Mathematical Control Theory" or "Control Theory" is required.

Intended learning outcomes

The student gains insight into contemporary research problems in robotics, optimization and control theory. He/She masters advanced techniques in this field and can apply them to complex problems.

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

V (2) + 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)

Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Economathematics (2025)

Module title	Abbreviation
Research in Groups - Time Series Analysis	10-M=GTSA-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Selected modern topics in time series analysis.

Recommended previous knowledge:
Basic knowledge of stochastics is required, such as that acquired in the "Stochastics 1" module. Knowledge of the contents of the module "Stochastics 2" is also recommended.

Intended learning outcomes

The student gains insight into contemporary research problems in time series analysis. He/She masters advanced techniques in this field and can apply them to complex problems.

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

V (2) + 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)

Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Economathematics (2025)

Module title			Abbreviation
Research in Groups - Statistics			10-M=GSTA-161-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Selected modern topics in statistics.

Recommended previous knowledge:
Basic knowledge of stochastics is required, such as that acquired in the "Stochastics 1" module. Knowledge of the contents of the module "Stochastics 2" is also recommended. Depending on the content of the course, other prior knowledge may also be helpful; consultation with the lecturer is recommended.

Intended learning outcomes

The student gains insight into contemporary research problems in statistics. He/She masters advanced techniques in this field and can apply them to complex problems.

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

V (2) + 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Mathematics (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) Mathematical Physics (2020)

Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Seminar in Dynamical Systems and Control Theory	10-M=SDSC-242-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

A modern topic in dynamical systems and control.

Recommended previous knowledge:
Knowledge of the contents of the module "Mathematical Control Theory" or "Control Theory" is required.

Intended learning outcomes

The student is able to elaborate a contemporary research topic. This includes comprehending and structuring of the topic and the available literature, preparing a talk and the ability to participate in a 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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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) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Seminar in Financial and Insurance Mathematics	10-M=SFIM-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

A modern topic in financial and insurance mathematics.

Recommended previous knowledge:
Familiarity with the contents of the modules "Introduction to Stochastic Financial Mathematics" and "Stochastics 1" is strongly recommended.

Intended learning outcomes

The student is able to elaborate a contemporary research topic. This includes comprehending and structuring of the topic and the available literature, preparing a talk and the ability to participate in a 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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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) Mathematics (2016)
Master's degree (1 major) Economathematics (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) Mathematics (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) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Economathematics (2025)

Module title			Abbreviation
Giovanni Prodi Seminar (Master)			10-M=SGPCin-152-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

A modern topic in the research expertise of the current holder of the Giovanni Prodi Chair.

Intended learning outcomes

The student is able to elaborate a contemporary research topic. This includes comprehending and structuring of the topic and the available literature, preparing a talk and the ability to participate in a scientific discussion.

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)

talk (60 to 120 minutes)
Language of assessment: English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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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) Mathematics International (2015)
Master's degree (1 major) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (2016)
Master's degree (1 major) Computational Mathematics (2016)
Master's degree (1 major) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (2019)
Master's degree (1 major) Mathematical Physics (2020)
Master's degree (1 major) Mathematics International (2021)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Mathematics International (2022)

Master's degree (1 major) Economathematics (2022)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Mathematics International (2025)
Master's degree (1 major) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Interdisciplinary Seminar	10-M=SIDC-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

A modern topic in mathematics with interdisciplinary aspects.

Intended learning outcomes

The student is able to elaborate a contemporary research topic. This includes comprehending and structuring of the topic and the available literature, preparing a talk and the ability to participate in a 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Economathematics (2025)

Module title			Abbreviation
Seminar Mathematics in the Sciences			10-M=SMSC-161-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

A modern topic in mathematics in the sciences.

Recommended previous knowledge:
Basic knowledge from the modules "Ordinary Differential Equations" and "Introduction to Partial Differential Equations" is recommended, as well as basic knowledge of functional analysis.

Intended learning outcomes

The student is able to elaborate a contemporary research topic. This includes comprehending and structuring of the topic and the available literature, preparing a talk and the ability to participate in a 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Economathematics (2025)

Module title			Abbreviation
Seminar in Numerical Mathematics and Applied Analysis			10-M=SNMA-161-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

A modern topic in numerical mathematics or applied analysis.

Recommended previous knowledge:
Depending on the content, basic and advanced knowledge from different areas of analysis and/or numerical mathematics is required. In case of doubt, it is recommended to consult the lecturer.

Intended learning outcomes

The student is able to elaborate a contemporary research topic. This includes comprehending and structuring of the topic and the available literature, preparing a talk and the ability to participate in a 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Seminar in Optimization			10-M=SOPT-161-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

A modern topic in optimisation.

Intended learning outcomes

The student is able to elaborate a contemporary research topic. This includes comprehending and structuring of the topic and the available literature, preparing a talk and the ability to participate in a 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Seminar in Statistics			10-M=SSTA-161-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

A modern topic in statistics.

Recommended previous knowledge:
Basic knowledge of stochastics is required, such as that acquired in the "Stochastics 1" module. Knowledge of the contents of the module "Stochastics 2" is also recommended. Depending on the content of the course, other prior knowledge may also be helpful; consultation with the lecturer is recommended.

Intended learning outcomes

The student is able to elaborate a contemporary research topic. This includes comprehending and structuring of the topic and the available literature, preparing a talk and the ability to participate in a 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Mathematics (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) Mathematical Physics (2020)

Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Seminar in Stochastics			10-M=SSTO-252-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

A modern topic in statistics.

Recommended previous knowledge:
Basic knowledge of stochastics is required, such as that acquired in the "Stochastics 1" module. Knowledge of the contents of the module "Stochastics 2" is also recommended. Depending on the content of the course, other prior knowledge may also be helpful; consultation with the lecturer is recommended.

Intended learning outcomes

The student is able to elaborate a contemporary research topic. This includes comprehending and structuring of the topic and the available literature, preparing a talk and the ability to participate in a 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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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) Mathematics (2016)
Master's degree (1 major) Mathematics (2019)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Economathematics (2022)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Economathematics (2024)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Seminar in Non-linear Analysis			10-M=SNLA-161-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

A modern topic in non-linear analysis.

Recommended previous knowledge:
Depending on the content, basic and advanced knowledge from different areas of analysis is required. In case of doubt, it is recommended to consult the lecturer.

Intended learning outcomes

The student is able to elaborate a contemporary research topic. This includes comprehending and structuring of the topic and the available literature, preparing a talk and the ability to participate in a 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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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) Mathematics (2016)
Master's degree (1 major) Economathematics (2016)
Master's degree (1 major) Mathematical Physics (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) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)

Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Seminar Applied Mathematics	10-M=SAMA-192-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

A modern topic in applied mathematics.

Recommended previous knowledge:
Depending on the content, basic and advanced knowledge from different areas of applied mathematics is required. In case of doubt, it is recommended to consult the lecturer.

Intended learning outcomes

The student is able to elaborate a contemporary research topic. This includes comprehending and structuring of the topic and the available literature, preparing a talk and the ability to participate in a 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: in the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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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) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (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) Mathematical Physics (2020)
Master's degree (1 major) Economathematics (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)

exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title	Abbreviation
Research in Groups - Inverse Problems	10-M=GINP-222-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

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

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

Selected modern topics in inverse problems.

Recommended previous knowledge:
After consultation with the lecturer, prior knowledge from the modules "Inverse Problems 1" and possibly "Inverse Problems 2" is recommended. The reseaarch in groups usually builds on the content of a course from the previous semester.

Intended learning outcomes

The student gains insight into contemporary research problems in inverse problems. He/She masters advanced techniques in this field and can apply them to complex problems.

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

V (2) + 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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Workload

300 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) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematical Physics (2022)
Master's degree (1 major) Economathematics (2022)
exchange program Mathematics (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (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) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Research in Groups - Mathematics of Machine Learning			10-M=GMAL-252-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Selected modern topics in mathematics of machine learning.

Recommended previous knowledge:
Knowledge of the contents of the module "Mathematical Data Science and Machine Learning" is recommended.

Intended learning outcomes

The student gains insight into contemporary research problems in mathematics of machine learning. He/She masters advanced techniques in this field and can apply them to complex problems.

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

V (2) + 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)

talk (60 to 120 minutes)
Language of assessment: German or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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Workload

300 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) Mathematics (2016)
Master's degree (1 major) Mathematics (2019)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Seminar in Mathematics of Machine Learning			10-M=SMAL-252-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

A modern topic in mathematics of machine learning.

Recommended previous knowledge:
After consultation with the lecturer, previous knowledge from the module "Mathematical Data Science and Machine Learning" is recommended.

Intended learning outcomes

The student is able to elaborate a contemporary research topic. This includes comprehending and structuring of the topic and the available literature, preparing a talk and the ability to participate in a 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)

talk (60 to 120 minutes)
Language of assessment: German and/or English
Assessment offered: In the semester in which the course is offered and in the subsequent semester

Allocation of places

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Additional information

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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) Mathematics (2016)
Master's degree (1 major) Mathematics (2019)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Mathematics (2024)
Master's degree (1 major) Mathematical Data Science (2025)
Master's degree (1 major) Economathematics (2025)

Module title			Abbreviation
Seminar: Master Wirtschaftsmathematik			12-M-SMWM-262-m01
Module coordinator		**Module offered by**	
--		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	--	--	

Contents

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Intended learning outcomes

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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 (approx. 100 to 150 hours total)
Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

300 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

keinem Studiengang zugeordnet

Thesis

(30 ECTS credits)

Module title			Abbreviation
Master Thesis Economathematics			10-M=MAAW-262-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
30	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	If necessary, topic-specific modules as specified by the supervisor.	

Contents

Independently researching and writing on a (potentially interdisciplinary) topic in mathematics and/or economics selected in consultation with the supervisor.

Intended learning outcomes

The student is able to work independently on a given topic in business mathematics and apply the skills and methods obtained during his/her studies in the master programme. He/She can write down the result of his/her work in a suitable form.

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 (750 to 900 hours total)
Registration and assignment of topic in consultation with supervisor.
Language of assessment: German or English

Allocation of places

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Additional information

Time to complete: 6 months

Workload

900 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

keinem Studiengang zugeordnet