Synopsis of the modules in the Master's Degree Program in Business Administration (M.Sc.)

| Mandatory Modules | Study Points |
|-----------------------|--------------|
| General Management | 15 |
| Methodological Skills | 15 |

| Mandatory Elective Modules | Study Points | |
|---------------------------------|--------------|--|
| (fields of specialization) | | |
| Accounting | 15 | |
| Entrepreneurship and Innovation | 15 | |
| Finance | 15 | |
| Financial Economics | 15-18 | |
| Marketing | 15 | |
| Operations Research | 15 | |
| Advanced Information System I | 6-9 | |
| IT Security and Privacy | 6 | |
| Applied Predictive Analytics | 6 | |
| Business Process Management | 6 | |
| E-Business and Online Marketing | 6 | |

| Elective Modules in Business Administration | Study Points |
|--|--------------|
| Accounting Courses | 6-18 |
| Accounting Research Seminar | 6 |
| Master Tax Seminar | 6-12 |
| Entrepreneurship and Innovation | 6-18 |
| Research Seminar on Entrepreneurship and Innovation | 6 |
| Finance | 6-27 |
| Management | 6-21 |
| Marketing | 6-21 |
| Operations Research (check at QM) | 6-18 |
| Financial Economics | 6-18 |
| Thesis Seminar Corporate Finance | 6 |
| Thesis Seminar Financial Economics | 6 |
| Strategic Management | 6 |
| Financial Contracting | 6-12 |
| Topics in the Theory of Markets and Organizations I/II | 9-18 |
| Topics in Energy and Network Economics | 6-15 |
| Real Estate Economics | 6 |
| Analysis of Competition | 6 |

| Elective Modules in Economics | Study Points |
|---|--------------|
| Advanced Microeconomics | 6 |
| Advanced International Trade | 6 |
| Theory of Incentives | 6 |
| European Integration | 6 |
| Empirical Labor Economics | 6 |
| Decision-Making under Uncertainty | 6 |
| Game Theory | 6 |
| Topics in Microeconomics | 6-18 |
| Information Economics | 6 |
| Advanced Microeconomics 1 (PhD-level) | 9 |
| Introduction to Advanced Macroeconomic Analysis | 6 |
| Advanced Monetary Economics | 6 |
| Labor Markets and Social Policy | 6-12 |
| Advanced Labor Economics | 9 |
| Current Issues in Macroeconomics | 6-12 |
| Topics in Macroeconomics | 6 |
| Advanced Macroeconomic Analysis I (PhD-level) | 6 |
| Advanced Macroeconomic Analysis II (PhD-level) | 6 |

| Current Research in Macroeconomics | 6 |
|---|------|
| Quantitative Macroeconomics and Numerical Methods | 6 |
| Economic History | 6-18 |
| Advanced International Trade: Theory and Empirics | 6 |
| Spatial Economics | 6 |
| Advanced Topics in Public Economics | 6-15 |
| Social Preferences | 6 |
| Theory of the State in Economics and in Law | 6-18 |
| Applied Microeconomics: Competition Policy | 6 |
| Selected Topics in Competition Policy | 6 |
| Topics in Industrial Organization | 6-12 |
| Datengrundlagen der Wirtschaftspolitik (German) | 6 |

| Elective Modules in Quantitive Methodology | Study Points |
|---|--------------|
| Operations Research | 6-18 |
| Business Information Technology – see field of specialization | |
| Multivariate Statistical Analysis | 6-9 |
| Advanced Statistics | 6-15 |
| Statistics and Finance | 6-15 |
| Privatissimum Statistics | 30 |
| Econometric Methods | 9 |
| Time Series Analysis | 6-9 |
| Selected Topics in Econometrics | 6 |
| Econometric Projects | 6 |
| Analysis of Panel Data | 6 |
| Multiple Time Series Analysis | 6 |
| Microeconometrics | 6 |
| Financial Econometrics | 6-9 |
| Advanced Econometrics | 6 |

| Elective Modules | Study Points |
|--|--------------|
| Variable Module for completing courses inside the economic department | 3-12 |
| Elective Module for courses outside of the economic department which students may select on their own initiative | 3-15 |

Master Thesis

Students are awarded 30 study points for the Master Thesis.

Competency Targets of the Mandatory and of the Mandatory Elective Modules in the Master's Program "Business Administration"

Students will acquire specific knowledge in the fields of General Management and Methodological Skills, which they will be able to apply in concrete situations, as well as a broad understanding of the most recent developments in these economic disciplines.

Students will be able to pass this knowledge on; they will learn to structure it, to classify it, to arrange it, to visualize it, as well as to judge this information with a critical eye, to assess its value.

Students will be encouraged to make the effort necessary for a successful course of studies, as well as to create the preconditions, through their dedication and commitment, for a productive intellectual climate through all the various phases and stages of their course of study.

Students will learn to select and apply the appropriate scientific and academic methodologies as well as the specific tools and resources needed to solve a specific problem.

Students will improve their ability to accept criticism and to engage with this criticism in a fruitful manner. They will also improve their ability to contribute intelligently to discussions and to defend their arguments. Students will also learn to assume various roles, such as participants in discussions, or experts or moderators. Students will improve their abilities to work in teams and to sustain their own life-long learning.

At the end of their course of studies, students will be able to work independently and to assume responsibility when they undertake demanding and challenging tasks in business and in public administration. Students will acquire the ability to undertake analytical analysis, within the framework of which the methodology of academic economics is used, to analyze complex economic problems in order to describe these

problems clearly and lucidly, and in so doing to assist and prepare the management of firms and corporation in regard to important decisions.

Students will be introduced to the most recent research and they will be able and qualified to apply the most recent methodological developments in economics; indeed, students will have reached a level such that they would be qualified to independent academic work or to do a doctorate in these fields.

Kompetenzziele des Pflicht- und Wahlpflichtbereiches im Masterstudiengang Betriebswirtschaftslehre

Die Studierenden erwerben vertiefendes und anwendungsorientiertes Wissen auf den Fachgebieten der "Allgemeinen Betriebswirtschaftslehre" (General Management) und den "Methodischen Grundlagen" (Methodological Skills) sowie weiterführendes Wissen über die aktuellsten Entwicklungen in diesen Wissenschaftsdisziplinen.

Die Studierenden sind in der Lage, dieses Wissen wiederzugeben, zu strukturieren, konstruktiv und kritisch einzuordnen, zu gewichten und zu veranschaulichen.

Die Studierenden sind motiviert, den für einen positiven Studienerfolg notwendigen persönlichen Einsatz zu leisten und schaffen durch ihr Engagement die Voraussetzungen für ein konstruktives Studienklima in den verschiedenen Formen und Phasen des Studiums.

Die Studierenden lernen, die für ein erfolgreiches Studium erforderlichen und geeigneten wissenschaftlichen Arbeitsmethoden und Hilfsmittel auszuwählen und gezielt zur Lösungsfindung/Problemlösung einzusetzen. Die Studierenden können fundierte Kritik akzeptieren und sich damit auseinander setzen. Gleichzeitig sind sie in der Lage, kritische Argumente in Diskussionen einzubringen und zu verteidigen. Sie lernen dabei verschiedene Rollen als Diskutant/in, Expert/in oder Moderator/in einzunehmen.

Die Studierenden erwerben die Fähigkeit zu Teamarbeit und lebenslangem Lernen.

Die Studierenden sind in der Lage, in der freien Wirtschaft und in der Verwaltung anspruchsvolle und verantwortliche Aufgaben selbständig zu übernehmen.

Die Studierenden erwerben die Fähigkeit zum Einstieg in analytische Tätigkeiten, im Rahmen derer wirtschaftswissenschaftliche Methoden genutzt werden, um komplexe wirtschaftliche Probleme übersichtlich darzustellen und so wichtige Entscheidungen des Managements von Unternehmen vorzubereiten. Die Studierenden werden an den aktuellen Stand der Forschung herangeführt und werden befähigt, wirtschaftswissenschaftliche Methoden auf einem Niveau einzusetzen, das sie für eine selbständige akademische Tätigkeit oder eine Promotion in diesen Gebieten qualifiziert.

The mandatory module General Management aims at equipping students with necessary backgrounds in all relevant areas of management science, including finance and accounting. Students in the Master of Business Administration program are required to acquire 15 SP for completing this module. Students are suggested to select courses so that they obtain advanced background knowledge in the areas where they did not acquire sufficient skills in their undergraduate studies.

Prerequisites to participate in the module: none Periods/ SP; work load Topics Course Week Lecture/ 2 The goal of the course is to present 3: students the basics of financial accounting. Tutorial Attendance (30 h), The course comprises three main parts. The Literature study (30 h), first part deals with the objectives of Introduction Exam preparation (30 h). financial accounting and the question why to Financial and how financial accounting is regulated. Accounting The second part provides an introduction to group accounting including details on consolidation methods and cash flow statements. The third part focuses on specific accounting rules under International Financial Reporting Standards (IFRS). Lecture/ 2 3: The goal of the course is to offer students Tutorial the foundations of financial statement Attendance (30 h), analysis. It covers theoretical foundations Literature study (30 h), as well as practical aspects. The course Financial Exam preparation (30 h). introduces corporate reporting as one of the Statement main information sources for financial Analysis statement analysis, and covers topics related to strategy analysis, financial analysis, forecasting methods and valuation models. The last part of the course presents equity security analysis and credit analysis. Lecture 2 3. The lecture aims at investigating Attendance (30 h) entrepreneurship and innovation from an **Economics** Preparation (30 h) economic point of view. It covers venture Exam preparation (30 h) financing, running and terminating a of Entrepreneu venture, and government policy. rship 2 Lecture Institutionelle und theoretische Analyse 3: Attendance (30 h) internationaler Finanzmärkte und ihrer International Preparation (30 h) Bedeutung für Finanzierungsentscheidungen Financial Exam preparation (30 h) Management (German) 2 3; Lecture Theories and strategies of marketing Attendance (30 h) management and their corresponding Required readings (30 h) Marketing instruments Management Exam preparation (30 h) Integrated 4 6; Corporate financing, corporate cash Lecture Class attendance (60 h) management, capital structure, dividend Literature study (30 h) policy, Company & project valuation Corporate Preparation of and participation in Finance tutorial sessions (60 h)

| | | Exam preparation | (30 h) | |
|--|------------|---|--------|--|
| Lecture Grundzüge der Besteuerung (German) | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation |) | Grundprinzipien der Besteuerung; Grundzüge des deutschen Unternehmenssteuerrechts (Einkommen-, Körperschaft- und Gewerbesteuer) |
| Module examir | nations | Written exam (60 min) Corporate Finance: Written exam (90 min) | | |
| Duration of the | e module | □ 1 Semester | | |
| Module can be | started in | ☑ Fall Semester <u>or</u> Semester | | |

| Mandatory Module: Methodological Skills | Study Points: 15 |
|---|------------------|
| | |

The mandatory module Methodological Skills aims at equipping students with necessary Knowledge to understand and evaluate current research as well as to successfully address own research questions in the area of business and management science. Students are free to select courses of their own choice to obtain the 15 SP required for completing this module. In doing so, students have the possibility to decide upon their own methodological focus. In addition, students are free to take additional courses from this module as separate modules in their free elective studies.

Students have to choose between Econometric Methods (9) or Multivariate Statistical Analyses + Statistical Programming Languages (9) plus/AND one course in economics (6).

| Course | Periods/ Week | SP; work load | Topics | |
|---|------------------|---|--|--|
| Lecture/ Tutorial Econometric Methods | 6 | 9; Visiting the lecture (60 h), Preparation for courses (60 h), Exam preparations (60 h); Attendance, Preparation for and review of tutorial sessions (60 h) | Generalized linear model, stochastic regressors, nonlinear regression models, Specification, and simultaneous equation models | |
| Lecture/ Tutorial Multivariate Statistical Analysis | 4 | 6; Participation in Course (60 h) Self-study (60 h), Exam preparation (60 h) | Graphical display of multidimensional data, Repetition: matrix algebra, linear model, correlation, Multivariate random variables, Multinormal distribution, Maximum likelihood theory, Principal components, Discriminant Analysis, Cluster Analysis. | |
| Lecture/ Tutorial Statistical programmin g languages (XIC) | 2 | 3; Participation in Course (30 h) Self-study (30 h) Exam preparation (30 h) | Data Analysis and programing statistical algorithms in the programming languages R or Matlab | |
| Lecture/ Tutorial Introduction to Advanced Microecono mic Analysis | 4 | 6; Visiting the lecture (30 h), Preparation for courses (30 h), Exam preparations (30 h); Attendance, Preparation for and review of tutorial sessions (90 h) | Monopoly and Regulation, General Equilibrium and Welfare, Oligopoly, Auctions, Economics of Incomplete Information | |
| Lecture/ Tutorial Applied Microecono mics: Competition Policy | 4 | 6; Visiting the lecture (30 h), Preparation for courses (30 h), Exam preparations (30 h); Attendance, Preparation for and review of tutorial sessions (90 h) | Neoclassical welfare theorems; normative results of static (SCP, dynamic price competition, vertical restraints) and dynamic (patent races, endogenous growth theory) industrial organization theory. | |
| Lecture/ Tutorial Introduction to Advanced | 4 | 6; Visiting the lecture (30 h), Preparation for courses (30 h), Exam preparations (30 h); Attendance, Preparation for and | Key tools for macro- economic analysis and basic applications. | |

| Macroecono mics Analysis | | review of tutorial sessions (90 h) | |
|--|----------|--|--|
| Lecture/ Tutorial Game Theory | 4 | 6; Attendance (60 h) Preparation (60 h) Exam preparation (60 h) | Normal-form games, extensive-form games, games with incomplete information, standard solution concepts and refinements |
| Module examinations | | Written exam for each course, tir examination are possible. | ne depends on SP awarded, other means of |
| Duration of the | e module | □ 1 Semester | |
| Module can be started in Semester or | | 1 3 | ester |

This module is tailored for students who are interested in both, extending their understanding of the institutional details of financial accounting by discussing current advanced topics of practical interest in the area of financial accounting and auditing, and in gaining theoretical insights into the economic perspectives of accounting.

This module is also designed for students who are interested in tax regulations and the impact of taxation on decision making, in particular with respect to investment and financing activities or the legal form of a company. Furthermore, current topics in taxation of practical and academic interest are highlighted and the effects of tax reforms and tax reform proposals are analysed.

In order to successfully complete this module, students will need a thorough understanding of financial accounting, both based on HGB and on IFRS, of financial statement analysis and of group accounting. The Accounting Theory and Earnings Management class will be given in English and the Advanced Topics in Accounting and Auditing class will be given in English or German depending on demand. The Case Seminar language will depend on the students enrolled.

| Course | Periods/ Week | SP; work load | Topics |
|--|------------------|--|---|
| Lecture Advanced Topics in Accounting | 2 | 3; Attendance (30 h), literature study (30 h), exam preparation (30 h) | Topics include but are not limited to: accounting for lease transactions, accounting for financial instruments, hedge accounting, accounting for stock based compensation, accounting for special purpose entities, special industry accounting, recent regulative changes in standard setting, auditing and corporate governance, valuation based on accounting information, earnings management. |
| Lecture/ Tutorial Accounting Theory and Earnings Management | 3 | 6 Attendance (30 h), literature study (30 h), preparation of and participation in tutorial sessions (45 h), homework (45 h); exam preparation (30 h) | Institutions of accounting; the role of accounting based information from a valuation and from a contracting perspective; accounting and capital market based asset pricing, incentives and earnings management |
| Applied Seminar Advanced Cases in Accounting and Auditing | 2 | 6; Seminar attendance (30h), study of the relevant literature (30 h), preparation, presentation and discussion of the team case-study (60 h), preparation of other cases and participation in the course (60 h). | The cases discussed in this seminar encompass a wide variety of subject, ranging from specific problems in accounting measurement over valuation related problems in IPO or merger and acquisitions settings to problems related to the identification of fraudulent earnings management |
| Lecture/ Tutorial Financial Statement Analysis | 2 | 3; Attendance (30 h), Literature study (30 h), Exam preparation (30 h). | The goal of the course is to offer students the foundations of financial statement analysis. It covers theoretical foundations as well as practical aspects. The course introduces corporate reporting as one of the main information sources for financial statement analysis, and covers topics related to strategy analysis, financial analysis, forecasting methods and valuation models. The last part of the course presents |

| | | | equity security analysis and credit analysis. |
|---|---|--|---|
| Lecture/ Tutorial Umwandlung von Unter- nehmen und Besteuerung (German) | 3 | 4,5; Attendance (30 h), literature study (30 h), preparation and participation in tutorial sessions (45 h); exam preparation (30 h) | Taxation of restructuring of enterprises according to the German Reorganization Tax Law; tax-optimal design of reorganization processes, impact of taxation on a company purchase. The classes are held in German. |
| Lecture Steuerwir- kungslehre (German) | 2 | 3; Attendance (30 h), literature study (30 h), exam preparation (30 h) | Integration of German profit taxation (income tax, corporate tax and German local business tax) in common financial decision models to analyse the impact of taxation on decision making; the focus is on the impact of taxation on corporate investment and financing decisions in a national and international context. The classes are held in German. |
| Case Study Seminar Fallstudien zur Steuer- wirkungs- lehre (German) | 2 | 4,5; Attendance (30 h), literature study (30 h), preparation and participation in tutorial sessions (45 h), exam preparation (30 h) | The effects of German profit taxation (income tax, corporate tax and German local business tax) are analysed applying complex practice-oriented case studies. The classes are held in German. |
| Lecture/Tuto rial Internatio- nale Unter- nehmensbe- steuerung (German) | 4 | 6; Attendance (60 h), literature study, preparation (60 h); exam preparation (60 h) | Taxation of inbound and outbound investments, double taxation agreements, controlled foreign corporation rules, optimal policy of investment and financing decisions taking into account taxation. The classes are held in German. |
| Guest lecture Umsatz- steuer und steuerliches Verfahrens- recht (German) | 2 | 3; Participation in Course (30 h), Self-study (30 h), Exam preparation (30 h) | Students learn about the German value added tax system on the basis of practical examples of tax jurisdiction and tax issues of firms. They get familiar with systematic aspects of German value added tax law. Main topics are deliveries and services, group taxation, input tax deduction and correction of input tax deduction. In procedural tax law students learn to apply the procedural rules of the German fiscal code. In addition, they get to know the interaction of procedural and substantive law. Key points are the tax bill, legal means, the tax appointment period and modification regulations. Furthermore the students are introduced to the German criminal code for tax offences. |
| Guest lecture Internatio- nale Steuer- planung in der Praxis (German) | 2 | 3; Participation in Course (30 h), Self-study (30 h), Exam preparation (30 h) | Variable topics The classes are held in German. |

| Module examinations | Lecture/Tutorial: Written exam (60 - 120 min) or oral exam, Applied Seminar Advanced Cases in Accounting and Auditing: Preparation, presentation and discussion of the team case-study, participation in the seminar Case Study Seminar: Written or oral exam (60 min) | |
|--------------------------|---|-----------------|
| Duration of the module | 1 Semester | 2 Semesters |
| Module can be started in | ⊠ Fall Semester <u>or</u> | Spring Semester |

| Mandatory Elective Module: Entrepreneurship and Innovation Study Points: 15 | | | | | |
|--|--|--|--|--|--|
| Responsible: Schade | | | | | |
| Goals: | | | | | |
| made. Theories sp Normative perspe are covered. The lecture covers and decision theo The tutorials will r assignments (e.g. | hat the psych ban optimizat ctives and de s empirical fir ry. re-examine th questionnair | ological characteristics of entreprene ion, decision making under risk and escriptive findings are confronted. De ndings on the entrepreneurial persor neories, models and methods introdu re experiments) to empirically analysis on into analysis of data on entrepren | uncertainty, and ga ecision anomalies in nality and basic mod uced during lectures ze the issues cover | ame theoretic approaches. a entrepreneurial behavior dels of (descriptive) game s and make intensive use of ed by this course. The | |
| | an innovatior | lished companies may want to forec n. The lecture aims at introducing stu f innovations. | | 5 0 | |
| experimental ecor innovation. The co econometric analy entrepreneurship The tutorials prov statistical method analysis technique | nomics. Exam burse will also vsis of experin and innovatio ide exercises s and evalua es with SPSS | c basics of experimentation and exp nples analyzed are predominately fro o cover an introduction into program mental data. A second focus will be on as predictions for experiments. on the basis of the underlying expe te experimental data. The tutorials i software during computer sessions. | om the area of entre iming of experimen on modelling scena rimental designs ar ntroduce and practi | epreneurship and ts and statistic / rios relevant to nd models as well as discuss ce the experimental data | |
| Prerequisites to pa In order to succes | • | the module: none ete this module, you have to accomp SP; work load | blish 15 SP (450 h) | | |
| Course | Week | SF, WOIK IUdu | Topics | | |
| Entrepreneurial Preparati Decision Making Tutorial: Attendan Preparati (15 h), | | Lecture: Visiting the lecture (30 h), Preparation for courses (30 h), Exam preparation (30 h) Tutorial: Attendance of sessions (30 h), Preparation for tutorial sessions | decision and gan entrepreneurship Tutorial: Exercise question | nology of entrepreneurs, ne theoretic models of o ns, empirical studies, on entrepreneurial decisions | |
| Lecture 2 Marketing of Innovations | 2 | 3; Visiting the lecture (30 h), Preparation for courses (30 h), Exam preparation (30 h) | | vation diffusion, innovation ovation marketing | |
| Lecture + Tutorial 3: Design of | 4 | 6; Lecture: Visiting the lecture (30 h), Preparation for courses (30 h), Exam preparation (30 h) | decision experim | ern research on design of ents; using models to is; statistical analysis of | |

Exam preparation (30 h)

Tutorial:

experimental data

Decision

Experiments

| | | Attendance of sessions (30 h), Preparation for tutorial sessions (60 h) | Tutorial: Exercises applying the knowledge of the lecture; analysis of experimental data with SPSS | |
|---|-------|---|---|--|
| Lecture 4: Advanced Research on Entrepreneurship and Innovation (irregular schedule, depending on the availability of guest professors; see the precise name of the lecture in schedule) | 2 - 4 | 3 - 6; Lecture: Visiting the lecture (30 h), Preparation for courses (30 h), Exam preparation (30 h) Depending on the instructor the lecture might be accompanied by a tutorial, in this case: Attendance of sessions (30 h), Preparation for Tutorial sessions (15 h), Assignments (45 h) | Lecture: Application of economic and management research to entrepreneurship. Tutorial: Exercises and model application; small empirical studies | |
| Module examinations | | Lecture and Tutorial 1: Written exam (90 minutes, 70% of final mark); Assignments (30% of final mark) Lecture 2: Written exam (60 minutes) Lecture and Tutorial 3: Written exam (90 minutes) Lecture 4 (depending on the lecturer): Written exam (60 minutes if 3 SP, 90 minutes if 6 SP) or assignment and presentation of results or assignment and written exam (60 minutes if 3 SP, 90 minutes if 6 SP) | | |
| Duration of the module | | □ 1 Semester | | |
| Module can be started in | | Image: Semester or Semester or | | |

| Mandatory Elective Module: Finance |
|------------------------------------|
| Responsible: Müller |

To gain a deep understanding of advanced issues in financial decision making.

The lecture <u>"International Financial Management"</u> will focus on how to model financial problems and solve them using both national and international financial markets.

The <u>lecture "Finanzierungstheorie"</u> aims at broadening the understanding of financial decision making through the application of normative and descriptive decision and game theoretic models. The tutorials will revisit these models and apply them to problems and discuss them in the financial context.

The <u>seminar "Market Microstructure"</u> covers recent developments in trading rules at organized exchanges and trading platforms, both theoretically und experimentally.

During the <u>seminar "Finance"</u> students will do some research on their own by applying these methods of lectures and tutorials to complex cases.

During the <u>seminar "Topics in Finance: Leasing"</u> students will do some research on their own by applying these methods of lectures and tutorials to problems of Leasing.

In the lecture <u>"Börsen und ausserbörsliche Handelsplattformen</u>" students will learn about the latest and relevant developments in trading at exchanges and other trading platforms.

| | - | | |
|---|------------------|--|--|
| Course | Periods/ Week | SP; work load | Topics |
| Lecture International Financial Management | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | National and International Financial Markets, the International Corporation, Valuations of Securities, Decision, Problems of International Corporations |
| Lecture Finanzierung stheorie (German) | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Valuation of Investments under Uncertainty, Capital Budgeting with Taxes and Inflation, Modigliani/Miller Model with Taxes, Optimal Dividend Policy, Agency Models Dealing with Separation of Ownership and Management, Leasing |
| Tutorial | 2 | 3; Attendance (30 h) Preparation (15 h) Assignments (45 h) | Exercises and Model Application |
| Seminar Market Micro- structure | 2 | 6; Attendance (30h), Seminar paper (60 h) Preparation (courses, exam) (90 h) | Market Microstructure |
| Seminar Finance | 4 | 6; Attendance (60 h) Seminar paper and presentation (120 h) | Topics in Finance |
| Seminar Topics in | 2 | 3; Attendance (30 h) Seminar paper and presentation | Topics in Finance: Leasing |

| Finance: Leasing | | (60 h) | |
|--|---|--|--|
| Lecture Börsen und außerbörslic he Han- delsplatt- formen (German) | 2 | 3; Visiting the lecture (30h) Preparation for courses (30h) Exam preparations (30h) | Exchanges and Trading Platforms |
| Module examinations | | Finanzierungstheorie: Written Seminar Market Microstructure minutes, 50 %) Seminar Finance: seminar pap Seminar Topics in Finance: Lea | ement: Written exam (60 minutes) exam (90 minutes) e: seminar paper (50 %) and written exam (60 er (50 %) and presentation (50 %) asing: seminar paper and presentation ndelsplattformen: Written exam (60 minutes) |
| Duration of the module | | 1 Semester 2 Semesters | |
| Module can be started in | | ☐ Fall ☐ Spring S Semester <u>or</u> | Semester |

Study Points: 15-18

Responsible: Adam, Stomper

Goals:

This module provides master students with knowledge of financial economics and covers subjects such as corporate finance, asset pricing, market microstructure, financial intermediation, and effects of finance on non-financial markets. All courses are taught in English.

Prerequisites: Knowledge of the principals of finance theory: capital asset pricing model (CAPM), efficient market hypothesis, Markowitz portfolio selection, Modigliani-Miller theorem, DCF valuation. The last two concepts are covered in the IV Corporate Finance.

| Course | Periods /Week | SP; work load | Topics |
|---|------------------|--|---|
| Lecture/ Tutorial Asset Management (mandatory) | 4 | 6; Class attendance (60 h) Literature study (30 h) Preparation for tutorial sessions (60 h) Exam preparation (30 h) | Implementation of simple asset pricing models and trading strategies with real world data (using MATLAP) |
| Lecture/ Tutorial Advanced Corporate Finance (mandatory) | 4 | 6; Class attendance (60 h) Literature study (30 h) Preparation for tutorial sessions (60 h) Exam preparation (30 h) | Impact of agency costs and information asymmetries on optimal capital structure, bankruptcy, project finance, payout policy, corporate governance, executive compensation |
| Lecture/ Tutorial Financial Engineering | 4 | 6; Class attendance (60 h) Literature study (30 h) Preparation of tutorial sessions (60 h) Exam preparation (30 h) | Forwards and futures, option pricing in the binomial model and the Black Scholes model, estimation of risk-neutral densities, and applications |
| Lecture Real Effects of Finance | 2 | 3; Class attendance (30 h) Literature study (30 h) Exam preparation (30 h) | Effects of financial market development(s) on non-financial markets such as product and labor markets |
| Seminar Real Effects of Finance | 2 | 6; Class attendance (30 h) Literature study (60 h) Preparation of the seminar paper and presentation (90 h) | Effects of financial market development(s) on non-financial markets such as product and labor markets |
| Lecture Private Equity | 2 | 3; Class attendance (30 h) Literature study (30 h) Exam preparation (30 h) | Mergers & acquisitions, private equity, venture capital. This course builds on the materials covered in Advanced Corporate Finance. |
| Case Seminar Corporate Finance | 3 | 6; Class attendance (45 h) Preparation, presentation and discussion of the team case-study (135 h) | This seminar discusses case studies that relate to the materials covered in Corporate Finance and Advanced Corporate Finance |

| Module examinations | Lectures: Written exams (60 or 90 min) Case Seminar: Case reports (80 %), presentations (20 %) Other seminars: Seminar paper (80 %), presentations (20 %) | | |
|--------------------------|---|--------------|--|
| Duration of the module | 1 Semester | 🛛 2 Semester | |
| Module can be started in | 🛛 WS <u>or</u> | ⊠ ss | |

Advanced Marketing Modelling:

Teaching and in depth discussion of advanced methods to empirically determine the causal relationship between marketing activities and firms' objectives. Special attention is given to modelling the effects of marketing on sales and market share data with discrete choice models for individual purchase data and aggregate sales data. In exercise courses students learn how to apply these methods to real data. Successful participation in this class will enable students to quantify the impact of marketing on key performance measures and to evaluate the success of marketing activities.

Customer Analytics and Customer Insights:

Teaching and in depth discussion of the basic concepts and methods to gain detailed understanding about firms' (potential) customers and their preferences. These insights will provide the basis for brand management and for strategic marketing decisions, especially the design of new products and the management of products over their life cycle. Students will also learn how to measure costumer needs, understand how customers perceive the product and service offerings of a firm and its competitors. We particular focus on estimating consumer preferences for product characteristics and brand preferences within the framework of discrete choice models and conjoint analysis.

Marketing Management (if not selected in the General Management): Teaching and in depth discussion of the marketing management process. Special attention is given to strategic marketing and the management of the marketing instruments. Successful participation in this class will enable students to evaluate marketing activities and to understand how marketing affects firms competitive position in the market.

| Prerequisites to participate in the module: none | | | | |
|--|------------------|--|--|--|
| Course | Periods/ Week | SP; work load | Topics | |
| Lecture/ Tutorial Advanced Marketing Modelling | 4 | 6; Attendance (30h + 30h) Preparation & homework (30h + 60h) Exam Preparation (30h) | Lecture: quantitative models of consumer behavior, modeling the effects of marketing on market outcomes and firms' profitability Tutorial: PC-based exercises | |
| Lecture/ Tutorial Customer Analytics and Customer Insights | 4 | 6; Attendance (60h) Preparation & homework (90h) Exam Preparation (30h) | Lecture: Concepts and methods for understanding customers need and preferences as the basis for strategic marketing. Special emphasis new product design, measuring customers preferences and conjoint analysis Tutorial: PC-based exercises | |
| Lecture Marketing Management | 2 | 3; Attendance (30 h) Required readings (30 h) Exam preparation (30 h) | Theories and strategies of marketing management and their corresponding instruments | |
| Project Seminar | 4 | 6; Project seminar: project work and documentation (180h) | Project work | |
| or | | or | or | |
| Seminar Marketing | | Seminar paper and presentation (180 h) | Recent topics in marketing management | |
| Module examinations | | Advanced Marketing Modelling: 100% Assignments Customer Analytic and Customer Analytics: 100% Assignments | | |

| | Marketing Management: Written exam (60 min) Project Seminar: Project work and documentation (80%) and presentation and in-class discussion (20%) Seminars: Seminar paper (70%) and presentation (30%) | | |
|--------------------------|--|-----------------|--|
| Duration of the module | 🛛 1 Semester | 2 Semesters | |
| Module can be started in | ⊠ Fall Semester <u>or</u> | Spring Semester | |

| Mandatory Elective Module: Operations Research | |
|--|--|
| Responsible: N.N. | |

This module offers students the opportunity to specialize in the area of Operations Research. Courses can be chosen from advanced OR-courses (OR III – OR IV), special topic courses and seminars. Special topic courses are offered on a variety of business management specializations, e. g. Revenue Management, Operations Management and Operational Risk Management, Financial Engineering, Queueing and Inventory Theory, Logistic and Supply Chain Management, simulation studies, stochastic modelling and optimization algorithms, etc.

Attention: The module will only be completed if at least one course from each category, i. e. advanced OR-courses, special topic courses and seminars (note, OR IV can be chosen as an advanced OR-course or as a seminar course, but not both) will have been successfully completed.

| Prerequisites to participate in the module: none | | | | |
|--|------------------|--|---|--|
| Course | Periods/ Week | SP; work load | Topics | |
| Regular Lectu | res: | | | |
| Lecture/ Tutorial OR III | 3 | 4,5; Attendance (45 h) Preparation and Homework assignments (60 h) Exam preparation (30 h) | Deterministic and stochastic dynamic programming; solution algorithms, business and economic applications | |
| Lecture/ Seminar OR IV | 3 | 4,5; Attendance (45 h) Preparation, Presentation and Homework assignments (30 h) Project work (60 h) | Lectures based on research articles, presentation of thesis and project work | |
| Special Lectur | res: | | • | |
| Every lecture marked as Special OR lecture in the university calendar | 3 | 4,5; Attendance (45 h) Preparation and homework assignments (60 h) Exam preparation (30 h) | There will be special lectures on OR topics every semester. | |
| Seminars: | 1 | | | |
| Software in Operations Research | 2 | 6; Attendance (30 h) Preparation (30 h) Seminar paper and presentation (90 h + 30 h) | Introduction into the usage of, e. g. AMPL, OPL, AIMMS, NEOS, etc.; syntactic elements of model languages; linear, piecewise linear, quadratic and integer valued optimization problems | |
| Software project | 2 | 3; Implementation, documentation und presentation (90 h) | Developing software packages; long term projects | |
| Research Seminar | 2 | 3; Attendance (30 h) Reports and presentation (60 h) | Lectures on research projects | |

| Module examinations | Lecture/Tutorial OR III: Written exam (120 min, 100 %) or written exam (120min, 80 %) + homework assignments (20 %) Lecture/Seminar OR IV: Homework assignments (20 %), presentation (40 %) and project work (40 %) or presentation (30 %) and seminar paper (70 %) Seminar Software in OR: work reports (50 %), presentation (40 %), exercises (10 %) Seminar Softwareproject: reports (30 %) and software with software documentation (70 %) Lecture/Tutorial OR Special: Written exam (120 min, 80 %) and homework assignments (20 %) or written exam (100 %) or oral exam (100 %) | |
|--------------------------|--|--|
| Duration of the module | □ 1 Semester | |
| Module can be started in | ☐ Fall ☐ Spring Semester Semester <u>or</u> | |

Mandatory Elective Module Business Information Technology and Computer Science: Advanced Information Systems I

The module is concerned with the theories, concepts, and practices of Information Systems, emphasizing the support of support managerial decision making by means of formal, data oriented methods. Students have the opportunity to develop a variety of skills, including:

- Students understand the **peculiarities of analytical** as opposed to operational **information systems**.
- Students are aware of the specific requirements of **analytical data management** and how these are addressed in the context of data warehousing.
- Students possess a basic understanding of the three branches of descriptive, predictive and prescriptive analytics and appreciate the relationships between these streams.
- Given some data, students are able to select appropriate techniques to summarize and visualize the data so as to maximize managerial insight.
- Students understand the potential and also the limitations of predictive analytics to aid decision making. They comprehend when and how business applications can benefit from predictive analytics. Given some decision task, they are able to recommend suitable prediction methods.
- Students are familiar with the fundamentals of predictive modelling. Using standard software packages, they can develop basic and advanced prediction models and assess their accuracy in a statistically sound manner.
- Students are able to critically appraise recent IS trends and developments using established IS theories and practices.
- Students further develop their ability to conduct scholarly research, concentrating on academic writing, information retrieval and literature analysis.

| none | | | |
|--|---|--|---|
| Lehrver- anstaltungsart | Präsenzzeit Workload in Stunden | Leistungspunkte, Voraussetzung für deren Erteilung | Themen, Inhalte |
| Lecture Business Analytics & Predictive Modeling | 2 SWS 60 Hours Contact hours: 25 h Course pre- parathion: 35 h | 2 LP, Attendance | Fundamentals of Business Analytics Making data accessible: Tools for summarization, grouping, and visualization The business case for predictive modeling Prediction methods for regression and classification Advanced data types: time series, text, survival, and network data Fundamentals of intelligent search |
| Tutorial Business Analytics & Predictive Modeling | 2 SWS <u>60 Hours</u> Contact hours: 25 h Course pre- paration: 35 h | 2 LP, Attendance | Further elaboration of lecturing material. Practical PC exercises using various software packages (e.g., Excel, Matlab, Python) |
| Seminar Information Systems | <u>2 SWS</u> <u>60 Hours</u> Contact hours: 25 h Course pre- paration: 35 h | 2 LP Attendance | Students work in groups of two to three members and prepare a seminar thesis. The thesis relates to a current topic in the scope of IS. Seminar topics vary each year and will be announced in due course before the start of the seminar. All papers will be presented and discussed in the seminar sessions. |

Fachliche Voraussetzungen für die Teilnahme am Modul bzw. bestimmten Lehrveranstaltungen des Moduls: none

| Modulabschluss- prüfung | 60 HoursPreparation forwritten exam(90 min)30 hAssignments30 h | 2 LP, Pass written exam Business Analytics & Predictive Modeling (50%), in-course assignments (50%) |
|----------------------------|--|--|
| | 30 hoursPreparation ofseminar thesis:20 hLiterature retrievaland analysis:5 hPreparation of oralpresentation:5 h | 1 LP Seminar thesis (50%), Systematic retrieval and analysis of relevant literature (25%), oral presentation (25%) |
| Dauer des Moduls | I Semester | 2 Semester |
| Beginn des Moduls | 🖾 ws | □ ss |

Mandatory Elective Module Business Information Technology and Computer Science: IT Security & Privacy

Learning Objectives:

The module presents an introduction to engineering and management of IT security and privacy in networked organizations. Students have the opportunity to gain knowledge and develop skills in the following areas:

- Security and Privacy Requirements
- Cryptography
- Network Protocols
- System, Network and Web Security
- Privacy-Enhancing Technologies
- Security Management

Fachliche Voraussetzungen für die Teilnahme am Modul bzw. bestimmten Lehrveranstaltungen des Moduls: None

| Lehrver- | Präsenzzeit | Leistungspunkte | Themen, Inhalte | |
|-------------------------------------|---|---|--|--|
| anstaltungsart | Workload in Stunden | , Voraussetzung für deren Erteilung | | |
| Lecture IT Security & Privacy | <u>2 SWS</u> <u>60 Hours</u> Contact hours: 25 h Course pre- paration: 35 h | 2 LP, Attendance | There will be a lecture-style introduction to IT Security & Privacy. In parallel, students work together in groups and prepare a seminar thesis. The thesis relates to a current topic or project in the scope of IT Security and Privacy. Seminar topics vary each year and will | |
| Seminar IT Security & Privacy | <u>2 SWS</u> <u>60 Hours</u> Contact hours: 25 h Course pre- paration: 35 h | 2 LP, Attendance | be announced in due course before the start of the seminar. All papers will be presented and discussed in the seminar sessions. | |
| Modulabschluss- prüfung | 60 HoursPreparation of seminarthesis:30 hLiterature retrievaland analysis:15 hPreparation of seminarpresentation:15 h | Seminar thesis (50%), Systematic retrieval and analysis relevant literature (25%), oral presentation (25%) | | |
| Dauer des Moduls | I Semester | 2 Semester | | |
| Beginn des Moduls | 🖾 ws | □ss | | |

Mandatory Elective Module Business Information Technology and Computer Science: Applied Predictive Analytics

Learning Objectives:

The model give students an opportunity to participate in a real-world forecasting challenge related to planning problems in business areas such as marketing, finance, or others. In this scope, students have the opportunity to develop a variety of skills, including:

- Working in a **real-world project setting** allows students to further develop their **team work and project management** abilities.
- Students get acquainted with contemporary software packages for predict analytics.
- Students are able to **develop advanced forecasting models** using a variety of techniques from statistics, machine learning, and other domains.
- Students advance their knowledge in **data integration**, **preparation**, **and transformation** which allows them to create predictive variables from noisy real-world data sets.

Fachliche Voraussetzungen für die Teilnahme am Modul bzw. bestimmten Lehrveranstaltungen des Moduls: Module Business Analytics & Predictive Modeling

| Lehrver- anstaltungsart | Präsenzzeit Workload in Stunden | Leistungspunkte, Voraussetzung für deren Erteilung | Themen, Inhalte |
|--|---|--|--|
| Seminar Applied Predictive Analytics | <u>4 SWS</u> <u>120 Hours</u> Contact hours: 45 h Preparation and post- processing: 15 h Model development and evaluation: 60 h | 4 LP, Teilnahme | The module involves participating in a real-world forecasting competition such as the annual data mining cup, the ACM KDD cup, or a kaggle challenge. In this scope, students will experience several typical challenges that arise in real-world modeling projects, and develop the necessary skills to overcome these obstacles. |
| Modulabschluss- prüfung | 60 HoursStudy of relevantliterature:15 hPreparation ofcompetition entry:30 hPreparation of seminarpresentation:15 h | model) for a spec | a competition entry (typically a prediction ified forecasting challenge (50%), literature (25%), preparation of a tions (25%) |
| Dauer des Moduls | I Semester | | 2 Semester |
| Beginn des Moduls | □ ws | X | ss |

Mandatory Elective Module Business Information Technology and Computer Science: Business Process Management

Learning Objectives:

The module is concerned with theories, concepts, methods, and practices to analyze and continuously improve business processes. Students have the opportunity to develop a variety of skills, including:

- Students understand the origins, motivations and **objectives of business process management** and are familiar with the **process management lifecycle**.
- Students appreciate the role and potential of **information and communication technology** to improve business process performance.
- Students are familiar with the basic principles of qualitative and quantitative process analysis.
- Students have a sound knowledge of BPMN and are able to create process models for basic and advanced business processes.
- Students acquaint themselves with methods for assessing the relative merits and demerits of **business process outsourcing**.
- Students have a basic understanding of process mining and recognize the potential and limitations of automatic process detection.

| Lehrver- anstaltungsart | Präsenzzeit Workload in Stunden | Leistungspunkte, Voraussetzung für deren Erteilung | Themen, Inhalte | |
|--|---|--|---|--|
| Lecture Business Process Management | <u>2 SWS</u> <u>60 Hours</u> Contact hours: 25 h Course pre- paration: 35 h | 2 LP, Attendance | Process management lifecycle Principles of business process modeling using BPMN Process analysis Technologies for business process automation (e.g., BPEL) Business process outsourcing Process mining | |
| Tutorial Business Process Management | <u>2 SWS</u> <u>60 Hours</u> Contact hours: 25 h Course pre- paration: 35 h | 2 LP, Attendance | Further elaboration of lecturing material Exercises from the field of BPM Solving process modeling tasks using BPMN | |
| Modulabschluss- prüfung | <u>60 Hours</u> Preparation for written exam (90 min) | 2 LP, Pass written exam I | Business Process Management | |
| Dauer des Moduls | 🛛 1 Semester | 2 Semester | | |
| Beginn des Moduls | 🗆 ws | □ss | | |

Fachliche Voraussetzungen für die Teilnahme am Modul bzw. bestimmten Lehrveranstaltungen des Moduls: none

Mandatory Elective Module Business Information Technology and Computer Science: E-Business and Online Marketing

Learning Objectives:

The module is concerned with theories, practices and technologies in the field of E-Business and Online Marketing. Students have the opportunity to develop a variety of skills, including:

- Students appreciate the state-of-the-art in E-Business and Online Marketing from a theoretical and practical standpoint.
- Students familiarize themselves with core E-Business applications (e.g., SCM, CRM, etc.), understand their origins, and how they depend on information and communication technology. Through generalizing these links, students are able to fully appreciate the relationship between internet technologies and E-Business strategy.
- Students are aware of key **E-Business models**, understand their relative merits and demerits, and are able to judge the appropriateness of these models for specific business applications.
- Students gain an overview of established and emerging internet technologies and understand the anatomy of web-based information systems. They also become acquainted with key technologies for system integration.
- Students appreciate the internet marketing mix, know about the different digital channels for marketing communication, and understand the concept of multi-channel management.
- Students are familiar with the fundamentals of web analytics to measure the effectiveness of online marketing initiatives.

| Lehrver- anstaltungsart | Präsenzzeit Workload in Stunder | Leistungspunkte, Voraussetzung für deren Erteilung | Themen, Inhalte | |
|---|---|--|---|--|
| Lecture E-Business & Online Marketing | <u>2 SWS</u> <u>60 Hours</u> Contact hours: 25 Course pre- paration: 35 | | E-Business strategy E-Business infrastructure E-Business applications Internet marketing mix Marketing communication using digital channels Web analytics fundamentals | |
| Seminar E-Business & Online Marketing | <u>2 SWS</u> <u>60 Hours</u> Contact hours: 25 Course pre- paration: 35 | | Based on the content of the lecture, students prepare a seminar thesis on current and emerging trends in E- business and online marketing and give an oral presentation | |
| Modulabschluss- prüfung | 60 HoursPreparation for written exam(60 min)30Preparation of seminar thesis30 | | | |
| Dauer des Moduls | 🛛 1 Semester | 2 Semester | | |
| Beginn des Moduls | □ ws | ⊠ ss | | |

Fachliche Voraussetzungen für die Teilnahme am Modul bzw. bestimmten Lehrveranstaltungen des Moduls: none

Competency Targets of the Elective Modules in the Master 's Program Business Administration

Students acquire supplementary and additional basic information and special knowledge from related academic disciplines, which can be used within the field of economics (contextual knowledge).

Students develop a good command of interdisciplinary problem-solving methods.

Students learn to develop and use internal and external resources.

Students will be able to expand and to deepen their individual profiles.

Students learn to be flexible, to be able to respond to quick or sudden changes and differing and varied situations, and indeed, to help shape such developments.

Students learn to perceive their own expectations, values and norms as well as the expectations, values and norms of others, to differentiate among them, and to treat others with respect and tolerance. They will be able to reflect on their own experiences and to create a link between such experiences and their current work as well as to question their own actions.

Students learn strategies to manage their time, to acquire knowledge, to reach decisions, to find solutions to problems and to manage projects.

Students are able to work in teams and to contribute independently and competently to solving problems.

Kompetenzziele des Wahlbereiches im Masterstudiengang Betriebswirtschaftslehre

Die Studierenden erwerben ergänzendes und weiterführendes Grundwissen und Spezialwissen aus verwandten Wissenschaftsdisziplinen, das in Beziehung zum Fachgebiet gesetzt werden kann ("Kontextwissen").

Die Studierenden lernen, fächerübergreifende Problemlösungsmethoden zu beherrschen.

Die Studierenden sind der Lage, interne und externe Ressourcen zu erschließen.

Die Studierenden sind in der Lage, erworbene individuelle Profile zu erweitern und zu vertiefen.

Die Studierenden sind so flexibel, sich auf schnelle oder plötzliche Veränderungen und unterschiedliche Situationen einstellen zu können und somit in der Lage, diese aktiv mitzugestalten.

Die Studierenden lernen, eigene und fremde Erwartungen, Normen und Werte wahrzunehmen, zu differenzieren und damit umzugehen (Toleranz). Sie können die eigenen Lebenserfahrungen reflektieren und Verbindungen zur aktuellen Arbeit herstellen sowie das eigene Handeln hinterfragen.

Die Studierenden verfügen über effiziente Arbeitstechniken wie Zeitmanagement, Wissenserwerb, Entscheidungsfindung, Problemlösungstechniken und Projektmanagement.

Die Studierenden besitzen die Fähigkeit, in einem Team zu arbeiten und einen eigenständigen und kompetenten Beitrag zur Projektlösung zu leisten.

Elective Module Business Administration: Accounting Courses Responsible: Gassen/Maiterth

Goals:

This module contains elective classes for master students. Students do not have to be enrolled into the accounting specialization in order to enroll into these classes.

Prerequisites to participate in the module: Students need a thorough understanding of financial accounting, both based on HGB and on IFRS, of financial statement analysis and of group accounting.

| Course | Periods/ Week | SP; work load | Topics |
|--|------------------|---|--|
| Lecture/ Tutorial Introduction to Financial Accounting | 2 | 3; Attendance (30 h), Literature study (30 h), Exam preparation (30 h). | The goal of the course is to present students the basics of financial accounting. The course comprises three main parts. The first part deals with the objectives of financial accounting and the question why and how financial accounting is regulated. The second part provides an introduction to group accounting including details on consolidation methods and cash flow statements. The third part focuses on specific accounting rules under International Financial Reporting Standards (IFRS). |
| Lecture/ Tutorial Financial Statement Analysis | 2 | 3; Attendance (30 h), Literature study (30 h), Exam preparation (30 h). | The goal of the course is to offer students the foundations of financial statement analysis. It covers theoretical foundations as well as practical aspects. The course introduces corporate reporting as one of the main information sources for financial statement analysis, and covers topics related to strategy analysis, financial analysis, forecasting methods and valuation models. The last part of the course presents equity security analysis and credit analysis. |
| Lecture/ Tutorial Accounting Theory and Earnings Management | 3 | 6; Attendance (30 h) Literature study (30 h) Preparation of and participation in Tutorial sessions (45 h) Homework (45 h) Exam preparation (30 h) | Institutions of accounting; the role of accounting based information from a valuation and from a contracting perspective; accounting and capital market based asset pricing, incentives and earnings management |
| Lecture/ Tutorial Advanced Topics in Accounting | 2 | 3; Attendance (30 h), Literature study (30 h), Exam preparation (30 h) | Topics include but are not limited to: accounting for lease transactions, accounting for financial instruments, hedge accounting, accounting for stock based compensation, accounting for special purpose entities, special industry accounting, recent regulative changes in standard setting, auditing and corporate governance, valuation based on accounting information, earnings management. |
| Applied Seminar Advanced Cases in Accounting and Auditing | 2 | 6; Seminar attendance (30h), Literature study (30 h) Preparation, presentation and discussion of the team case-study (60 h), Preparation of other cases and | The cases discussed in this seminar encompass a wide variety of subject, ranging from specific problems in accounting measurement over valuation related problems in IPO or merger and acquisitions settings to problems related to the identification of fraudulent earnings |

| | | participation in the course (60 h). | management |
|---|---|--|--|
| Research Seminar Empirical Methods in Accounting and Finance | 2 | 6; Seminar attendance (30h), study of the relevant literature (30 h), preparation, presentation and discussion of the group assignments (90 h), exam preparation (30 h). | This course aims at equipping students with the skill-set to design and conduct empirical studies based on observational (archival) data in the fields of accounting and finance. After successful completion of the course students should understand the fundamentals and common pitfalls of quasi- experimental research design, be familiar with matching mechanisms, instrumental variable and panel data approaches which help with causal inference, be aware of limitations of these research designs, and, using the statistical software packages STATA and/or SAS, have gathered experiences in designing and conducting large-scale research projects. |
| Research Seminar Financial Accounting Research Group | 2 | 6; Seminar attendance (30 h), study of the relevant literature (30 h), preparation and discussion of the assignments (120 h). | This seminar is targeted at interested students which have an active interest in current financial accounting topics and in cutting-edge financial accounting research. The main objective of this seminar is to introduce eligible students to current research in the area of financial accounting and auditing. |
| | | | In this context, we will provide participants with the necessary skills to comprehend common research design choices and to identify shortcomings of these choices. To achieve this, participants of the seminar will be invited to several lectures, tutorials and talks of international guests, which will take place at the institute. Since it is common to discuss the content of these talks beforehand, participants will also be invited to the corresponding discussion meetings at the institute. In addition, we will invite leading industry experts to discuss current financial accounting topics with us in a small colloquial atmosphere. Each seminar period will last for one academic year and we expect participating students to commit to the full year. |
| Lecture/ Tutorial Umwandlung von Unter- nehmen und Besteuerung (German) | 3 | 4,5; Attendance (30 h), Literature study (30 h), Preparation and participation in tutorial sessions (45 h); Exam preparation (30 h) | Taxation of restructuring of enterprises according to the German Reorganisation Tax Law; tax-optimal design of reorganisation processes, effects of taxation on the company purchase. The classes are held in German. |
| Lecture Steuerwir- kungslehre (German) | 2 | 3; Attendance (30 h), Literature study (30 h), Exam preparation (30 h) | Integration of the German profit taxes (income tax, corporation tax and trade tax) in common management decision models to analyse the effects of taxation on business decisions; the focus is on the impact of taxation on corporate investment and financing decisions in a national and international context. The classes are held in German. |
| Lecture/Tuto rial | 4 | 6; Attendance (60 h), | Taxation of inbound and outbound investments, double taxation agreements, controlled foreign corporation rules, |

| Internatio- nale Unter- nehmensbe- steuerung (German) | | literature study, preparation (60 h); exam preparation (60 h) | optimal policy of investment and financing decisions taking into account taxation. The classes are held in German. |
|---|---|--|---|
| Seminar Fallstudien zur Steuer- wirkungs- lehre (German) | 2 | 4,5; Attendance (30 h), Literature study (30 h), Exam preparation (30 h) | The effects of German profit taxes (income tax, corporation tax and trade tax) are analysed applying complex practice-oriented case studies. The classes are held in German. |
| Lecture/ Tutorial Steuerliche Gewinn- ermittlung (German) | 3 | 4,5; Attendance (30 h), literature study (30 h), preparation and participation in tutorial sessions (45 h); exam preparation (30 h) | Tax accounting regulations, relation between tax and financial accounting, taxation of formation and liquidation of an enterprise and tax specifics of partnerships. The classes are held in German. |
| Guest lecture Umsatz- steuer und steuerliches Verfahrens- recht (German) | 2 | 3; Participation in Course (30 h), Self-study (30 h), Exam preparation (30 h) | Students learn about the German value added tax system on the basis of practical examples of tax jurisdiction and tax issues of firms. They get familiar with systematic aspects of German value added tax law. Main topics are deliveries and services, group taxation, input tax deduction and correction of input tax deduction. In procedural tax law students learn to apply the procedural rules of the German fiscal code. In addition, they get to know the interaction of procedural and substantive law. Key points are the tax bill, legal means, the tax appointment period and modification regulations. Furthermore the students are introduced to the German criminal code for tax offences. |
| Guest lecture Internatio- nale Steuer- planung in der Praxis (German) | 2 | 3; Participation in Course (30 h), Self-study (30 h), Exam preparation (30 h) | Variable topics The classes are held in German. |
| Module exami | nations | presentation and discussion of the Research Seminar Empirical Metho (40 %) and written exam (60 %) | n Accounting and Auditing: Preparation, team case-study, participation in the seminar ds in Accounting and Finance: Assignments nting Research Group: Written Reviews |
| Duration of th | e module | ☐ 1 Semester ☐ 2 Semesters | |
| Module can be | Module can be started in Image: Spring Semester Semester or | | |

Elective Module Business Administration: Accounting Research Seminar (Master thesis seminar Accounting) Study Points: 6

Responsible: Gassen

Goals:

This seminar aims at developing the research skills which Master students need to develop and write a master thesis in the area of accounting. Students, who wish to write a master thesis at the Institute of Accounting and Auditing, have to enroll in and successfully complete this seminar.

Prerequisites to participate in the module: Students need a thorough understanding of the underpinnings of accounting, and have to complete the Master module Accounting as a field of specialization.

| Course | Periods/ Week | SP; work load | Topics |
|-----------------------------------|------------------|--|---|
| Accounting Research Seminar | 2 | 6; Attendance (30 h) preparation of a replication study with given data (90 h) presentation of influential articles of the field (30 h) preparation of a reviewer report for a working paper (30 h) | Students have to identify their own research question and develop a research exposé which provides the motivation for the research question and also explains the methodology the student will be using to address the research question. Based on this research exposé students can apply for a slot in the Seminar (acceptance to the seminar is limited). In the seminar, students will be presented with a methodological walk-through of different areas of accounting research. Also, students will be required to present and summarize influential papers in their respective research areas. |
| Module examinations | | Exposé development (40 %), paper presentation (20 %), homework (20 %), class discussion (20 %). | |
| Duration of the module | | ☐ 1 Semester ☐ 2 Semesters | |
| Module can be started in | | Fall Spring Seme Semester <u>or</u> | ster |

| Elective Mod | lule Business | Administration: | Master | Тах | Seminar |
|--------------|----------------|-----------------|--------|-----|---------|
| (Master thes | sis seminar Ta | ax) | | | |

Responsible: Maiterth

Goals:

The seminar aims at developing the research skills which Master students need to write a master thesis in the area of business taxation. Students, who intend to write their master thesis at the Institute of Business Taxation, are required to complete this seminar successfully.

Requirements for participation: Students need a profound knowledge of institutional details and economic effects of business taxation, and have to complete the Master module Accounting as a field of specialization.

| Course | Periods/ Week | SP; work load | Topics | |
|---|------------------|--|---|--|
| Master Tax Seminar (German) | 2 | 6; Seminar attendance (30h), preparation of the seminar paper (90h), presentation of the seminar paper, preparation and discussion of other seminar papers (60h) | During the seminar students deal with current tax issues and tax reforms respectively tax reform proposals in a national and international context. The classes are held in German. | |
| Current Issues in Tax Accounting (German) | 2 | 6; Seminar attendance (30h), Preparation of the seminar paper (90h), Presentation of the seminar paper, preparation and discussion of other seminar papers (60h) | Ín this seminar we discuss varying issues in taxation. The classes are held in German. | |
| Module examinations | | Seminar paper (50 %), presentation of the seminar paper and discussion of other seminar papers (50 %) | | |
| Duration of the module | | ☐ 1 Semester ☐ 2 Semesters | | |
| Module can be started in | | Fall Spring Seme Semester <u>or</u> | ster | |

| Elective Module Business Administration: Entrepreneurship and Innovation | Study Points: 6-18 |
|--|--------------------|
| Responsible: Schade | |

Lecture and Tutorial 1:

Students learn what the psychological characteristics of entrepreneurs are, and how entrepreneurial decisions are made. Theories span optimization, decision making under risk and uncertainty, and game theoretic approaches. Normative perspectives and descriptive findings are confronted. Decision anomalies in entrepreneurial behavior are covered. The lecture covers empirical findings on the entrepreneurial personality and basic models of (descriptive) game and decision theory.

The tutorials re-examine theories, models and methods introduced during lectures and make intensive use of assignments (e.g. questionnaire experiments) to empirically analyze the issues covered by this course. The tutorials provide an introduction into analysis of data on entrepreneurial decisions with SPSS.

Lecture 2:

Entrepreneurs as well as established companies may want to forecast innovation spread and effectively manage the marketing of an innovation. The lecture aims at introducing students to basic theories of and statistical approaches to the marketing of innovations.

Lecture and Tutorial 3:

The lecture covers the scientific basics of experimentation and experimental design with a special emphasis on experimental economics. Examples analyzed are predominately from the area of entrepreneurship and innovation. The course will also cover an introduction into programming of experiments and statistic / econometric analysis of experimental data. A second focus will be on modelling scenarios relevant to entrepreneurship and innovation as predictions for experiments.

The tutorials provide exercises on the basis of the underlying experimental designs and models as well as discuss statistical methods to evaluate experimental data. The tutorials introduce and practice the experimental data analysis techniques with SPSS software during computer sessions.

Lecture 4 covers application of advanced economic and management research to entrepreneurship and innovation.

Prerequisites to participate in the module: none

In order to successfully complete this module, you have to accomplish 6 SP (180h).

| Course | Periods/ Week | SP; work load | Topics |
|--|------------------|---|---|
| Lecture + Tutorial 1 Entrepreneurial Decision Making | 4 | 6; Lecture: Visiting the lecture (30 h), Preparation for courses (30 h), Exam preparation (30 h) Tutorial: Attendance of sessions (30 h), Preparation for tutorial sessions (15 h), Assignments (45 h) | Lecture: Differential psychology of entrepreneurs, decision and game theoretic models of entrepreneurship Tutorial: Exercise questions, empirical studies, analysis of data on entrepreneurial decisions with SPSS |
| Lecture 2 Marketing of Innovations | 2 | 3; Visiting the lecture (30 h), Preparation for courses (30 h), Exam preparation (30 h) | Theories of innovation diffusion, innovation adoption and innovation marketing |
| Lecture + Tutorial 3: Design of Decision Experiments | 4 | 6; Lecture: Visiting the lecture (30 h), Preparation for the courses (30 h), Exam preparation (30 h) | Lecture: Theory and modern research on design of decision experiments, using models to derive predictions, statistical analysis of experimental data |

| | | Tutorial Attendance of sessions (30 h), Preparation for tutorial sessions (15 h), Assignments (45 h) | Tutorial: Exercises applying the knowledge of the lecture, analysis of experimental data with SPSS | |
|---|-------|--|---|--|
| Lecture 4: Advanced Research on Entrepreneurship and Innovation (irregular schedule, depending on the availability of guest professors; see the precise name of the lecture in schedule) | 2 - 4 | 3 - 6; Lecture: Visiting the lecture (30 h), Preparation for courses (30 h), Exam preparation (30 h) Depending on the instructor the lecture might be accompanied by a tutorial, in this case: Attendance of sessions (30 h), Preparation for tutorial sessions (15 h), Assignments (45 h) | Lecture: Application of economic and management research to entrepreneurship. Tutorial: Exercises and model application; small empirical studies | |
| Module examinations | | Lecture and Tutorial 1: Written exam (90 minutes, 70%); assignments (30%) Lecture 2: Written exam (60 min); Lecture and Tutorial 3: Written exam (90 minutes) Lecture 4: Depending on the lecturer: Written exam (60 minutes if 3 SP, 90 minutes if 6 SP) or assignment and presentation of results or assignment and written exam (60 minutes if 3 SP, 90 minutes if 6 SP) | | |
| Duration of the mo | odule | ☐ 1 Semester ☐ 2 Semesters | | |
| Module can be started in | | ☐ Fall ☐ Spring Semester Semester <u>or</u> | | |

| Elective Module Business Administration: Research-Seminar on | Stud |
|--|------|
| Entrepreneurship and Innovation | |

tudy Points: 6

Responsible: Schade

Goals:

In the seminar, students will either design and conduct an experiment or work extensively on an economic or econometric model. Results are presented at a joint retreat out of Berlin.

| Course | Periods/ Week | SP; work load | | Topics |
|--------------------------|------------------|---|----------------|-------------------------------------|
| Research Seminar | 2 | 6; Seminar attendance (30 h), Literature Study (30 h), Preparation, presentation and discussion of the seminar paper (120 h) | | Conducting a small research project |
| Module examinations | | Seminar paper + presentation and discussion | | |
| Duration of the module | | I Semester | er 2 Semesters | |
| Module can be started in | | ⊠ Fall Semester <u>or</u> | Spring Seme | ster |

| Elective Module Business Administration: Finance |
|--|
| Responsible: Müller |

To gain a deep understanding of advanced issues in financial decision making.

The lecture <u>"International Financial Management"</u> will focus on how to model financial problems and solve them using both national and international financial markets.

The <u>lecture "Finanzierungstheorie"</u> aims at broadening the understanding of financial decision making through the application of normative and descriptive decision and game theoretic models. The tutorials will revisit these models and apply them to problems and discuss them in the financial context.

The <u>seminar "Market Microstructure"</u> covers recent developments in trading rules at organized exchanges and trading platforms, both theoretically und experimentally.

During the <u>seminar "Finance"</u> students will do some research on their own by applying these methods of lectures and tutorials to complex cases.

During the <u>seminar "Topics in Finance: Leasing"</u> students will do some research on their own by applying these methods of lectures and tutorials to problems of Leasing.

In the lecture <u>"Börsen und ausserbörsliche Handelsplattformen"</u> students will learn about the latest and relevant developments in trading at exchanges and other trading platforms.

| Course | Periods/ Week | SP; work load | Topics |
|---|------------------|---|--|
| Lecture International Financial Management | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | National and International Financial Markets, the International Corporation, Valuations of Securities, Decision, Problems of International Corporations |
| Lecture Finanzierung stheorie (German) | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Valuation of Investments under Uncertainty, Capital Budgeting with Taxes and Inflation, Modigliani/Miller Model with Taxes, Optimal Dividend Policy, Agency Models Dealing with Separation of Ownership and Management, Leasing |
| Tutorial Finanzierung stheorie (German) | 2 | 3; Attendance (30 h) Preparation (15 h) Assignments (45 h) | Exercises and Model Application |
| Seminar Market Micro- structure | 2 | 6; Attendance (30h), Seminar paper (60 h) Preparation (courses, exam) (90 h), | Market Microstructure |
| Seminar Finance | 4 | 6; Attendance (60 h) Seminar paper and presentation (120 h) | Topics in Finance |
| Seminar | 2 | 3; Attendance (30 h) | Topics in Finance: Leasing |

| Topics in Finance: Leasing | | Seminar paper and presentation (60 h) | |
|--|---|---|--|
| Lecture Börsen und ausserbörs- liche Han- delsplatt- formen (German) | 2 | 3; Visiting the lecture (30h), Preparation for courses (30h) Exam preparations (30h) | Exchanges and Trading Platforms |
| Module examinations | | Seminar Finance: seminar paper (Seminar Topics in Finance: Leasing | m (90 minutes) eminar paper and written exam (60 minutes) |
| Duration of the module | | □ 1 Semester | |
| Module can be started in | | ☐ Fall ☐ Spring Sem Semester <u>or</u> | ester |

Responsible: Prof. Dr. Beham

Lecture International Management (Dr. Anna-Maria Schneider)

Das Ziel der Lehrveranstaltung ist das Themenfeld des Internationalen Managements vertiefend zu betrachten. Neben der kritischen Reflexion von Theorien und empirischen Studienergebnisse wird durch Fallstudien der Praxisbezug hergestellt. Die Komplexität und Unterschiedlichkeit der Internationalisierungsprozesse soll aufgezeigt werden. Verschiedene alternative Internationalisierungsmodelle und Markteintrittsformen werden behandelt und kritisch hinterfragt. Ferner thematisiert die Lehrveranstaltung den internationalen Wettbewerb und mögliche Kooperationsformen zwischen den Unternehmen. Des Weiteren werden unternehmensinterne Handlungsfelder wie die das Wissens- & Innovationsmanagement und der Zuliefererauswahlprozess im Rahmen der Lehrveranstaltung näher beleuchtet. Sprache: deutsch

Seminar Supply Chain Management (Dr. Anna-Maria Schneider)

Das Ziel der Lehrveranstaltung ist sich spezifisch mit relevanten Themen des Supply Chain Managements zur beschäftigen. Anderseits sollen die Fähigkeiten der Studierenden in Bezug auf das wissenschaftliche Arbeiten, das Diskutieren theoretischer Ansätze und praxisbezogener Problemfelder sowie die Präsentation der eigenen Forschungsergebnisse gefestigt werden. Themenfelder wie die Globalisierung von Zuliefernetzwerken, Beschaffungsstrategien von Unternehmen, Supplier Relationship Management und Sustainable Supply Chain Management werden im Rahmen des Seminars analysiert und diskutiert. Sprache: deutsch

Seminar Management (Dr. Sarah Jastram)

Droroquisitos to portisinato in the module, popo

Das Seminar behandelt aktuelle Themen in der Managment-Lehre. Die Studierenden werden vornehmlich englische wissenschaftliche Fachpublikationen auswerten und die erlernte Theorie anhand von praktischen Fallstudien anwenden und vertiefen.

Research seminar Leadership (Prof. Dr. Barbara Beham)

Students develop and conduct their own research project on an actual topic in leadership research. Sprache: englisch/deutsch

| Prerequisites to participate in the module: none | | | | |
|--|------------------|--|---|--|
| Course | Periods/ Week | SP; work load | Topics | |
| Lecture International Management | 2 | 3; Attendance (30 h) Required readings (30 h) Exam preparation (30 h) | Vertiefung von Themenfeldern des internationalen Managements (Theorien und Fallbeispiele) | |
| Seminar Supply Chain Management | 2 | 6; Attendance (30 h) preparation and follow-up (30 h) preparation of presentation (30h) seminar paper (90 h) | Seminar zu spezifischen Forschungsgebieten des Supply Chain Managements | |
| Seminar Management | 2 | 6; Attendance (30 h) (written) preparation and follow- up (30 h) preparation of presentation (30h) seminar paper (90 h) | Seminar zu spezifischen Forschungsgebieten der Management-Lehre | |
| Reseach Seminar Leadership | 2 | 6; Attendance (30 h) preparation and follow-up (30 h) preparation of presentation (30h) seminar paper (90 h) | Research methods in contemporary leadership research | |

| Module examinations | Lecture International Management: Written exam (60 min) Seminar Supply Chain Management: seminar paper (60%), presentation (40%) Seminar Management: seminar paper (50%), presentation (50%) Research Seminar Leadership: Project report (75%), presentation (25%) | | |
|--------------------------|---|-----------------|--|
| Duration of the module | 🛛 1 Semester | 2 Semesters | |
| Module can be started in | 🛛 Fall | Spring Semester | |

| Elective Module | Business | Administration: | Marketing |
|------------------------|----------|-----------------|-----------|
| | | | |

Study Points: 6-21

Responsible: Klapper

Goals:

Advanced Marketing Modelling:

Teaching and in depth discussion of advanced methods to empirically determine the causal relationship between marketing activities and firms' objectives. Special attention is given to modelling the effects of marketing on sales and market share data with discrete choice models for individual purchase data and aggregate sales data. In exercise courses students learn how to apply these methods to real data. Successful participation in this class will enable students to quantify the impact of marketing on key performance measures and to evaluate the success of marketing activities.

Customer Analytics and Customer Insights:

Teaching and in depth discussion of the basic concepts and methods to gain detailed understanding about firms' (potential) customers and their preferences. These insights will provide the basis for brand management and for strategic marketing decisions, especially the design of new products and the management of products over their life cycle. Students will also learn how to measure costumer needs, understand how customers perceive the product and service offerings of a firm and its competitors. We particular focus on estimating consumer preferences for product characteristics and brands within the framework of discrete choice models and conjoint analysis.

Marketing Management (if not selected in the General Management):

Teaching and in depth discussion of the marketing management process. Special attention is given to strategic marketing and the management of the marketing instruments. Successful participation in this class will enable students to evaluate marketing activities and to understand how marketing affects firms competitive position in the market.

| Course | Periods/ Week | SP; work load | Topics | |
|--|------------------|---|--|--|
| Lecture/ Tutorial Advanced Marketing Modelling | 4 | 6; Attendance (30h + 30h) Preparation & homework (30h + 60h) Assignment Preparation (30h) | Lecture: quantitative models of consumer behavior, modelling the effects of marketing on market outcomes and firms' profitability Tutorial: Pc-based exercises | |
| Lecture/ Tutorial Customer Analytics and Customer Insights | 4 | 6; Attendance (60h) Preparation & homework (90h) Exam Preparation (30h) | Lecture: Concepts and methods for understanding customers need and preferences as the basis for strategic marketing. Special emphasis new product design, measuring customers preferences and conjoint analysis Tutorial: PC-based exercises | |
| Lecture Marketing Management | 2 | 3; Attendance (30 h) Required readings (30 h) Exam preparation (30 h) | Theories and strategies of marketing management and their corresponding instruments | |
| Project Seminar | 4 | 6; Project seminar: project work and documentation (180h) | Project work | |
| or | | or | or | |
| Seminar Marketing | | Seminar paper and presentation (180 h) | Recent topics in marketing management | |

Prerequisites to participate in the module: none

| Module examinations | Advanced Marketing Modelling: 100% Assignments Customer Analytics and Customer Insights: 100% Assignments Marketing Management: Written exam (60 min) Project Seminar: Project work and documentation (80%) and presentation and in-class discussion (20%) Seminars: Seminar paper (70%) and presentation (30%) | |
|--------------------------|--|-----------------|
| Duration of the module | 🛛 1 Semester | 2 Semesters |
| Module can be started in | ⊠ Fall Semester <u>or</u> | Spring Semester |

| Elective Module Business Administration: Financial Economics |
|--|
| Responsible: Adam, Stomper |

This module contains elective classes for master students interested in finance. All courses are taught in English.

Prerequisites: Knowledge of the principals of finance theory: capital asset pricing model (CAPM), efficient market hypothesis, Markowitz portfolio selection, Modigliani-Miller theorem, DCF valuation. The last two concepts are covered in the IV Corporate Finance.

| Course | Periods/ Week | SP; work load | Topics |
|--|------------------|--|---|
| Integrated Lecture Corporate Finance | 4 | 6; Class attendance (60 h) Literature study (30 h) Preparation of and participation in tutorial sessions (60 h) Exam preparation (30 h) | Corporate financing, corporate cash management, capital structure, dividend policy, company & project valuation |
| Lecture/ Tutorial Financial Engineering | 4 | 6; Class attendance (60 h) Literature study (30 h) Preparation of tutorial sessions (60 h) Exam preparation (30 h) | Forwards and futures, option pricing in the binomial model and the Black Scholes model, estimation of risk-neutral densities, and applications |
| Lecture/ Tutorial Asset Management | 4 | 6; Class attendance (60 h) Literature study (30 h) Preparation for tutorial sessions (60 h) Exam preparation (30 h) | Portfolio theory, the Capital Asset Pricing Model, Arbitrage Pricing Theory, Stock Valuation |
| Lecture Real Effects of Finance | 2 | 3; Class attendance (30 h) Literature study (30 h) Exam preparation (30 h) | Effects of financial market development(s) on non-financial markets such as product and labor markets |
| Seminar Real Effects of Finance | 2 | 6; Class attendance (30 h) Literature study (60 h) Preparation of the seminar paper and presentation (90 h) | Effects of financial market development(s) on non-financial markets such as product and labor markets |
| Lecture/ Tutorial Advanced Corporate Finance | 4 | 6; Class attendance (60 h) Literature study (30 h) Preparation for tutorial sessions (60 h) Exam preparation (30 h) | Impact of agency costs and information asymmetries on optimal capital structure, bankruptcy, project finance, payout policy, corporate governance, executive compensation |
| Lecture Private Equity | 2 | 3; Class attendance (30 h) Literature study (30 h) Exam preparation (30 h) | Mergers & acquisitions, private equity, venture capital. This course builds on the materials covered in Advanced Corporate Finance. |
| Case Seminar Corporate Finance | 3 | 6; Class attendance (45 h) Preparation, presentation and discussion of the team case-study (135 h) | This seminar discusses case studies that relate to the materials covered in Corporate Finance and Advanced Corporate Finance |

| | | | 1 | |
|--|---|---|---|--|
| Seminar Advanced Financial Economics – Asset Pricing | 2 | 6; Class attendance (60 h) Literature study (60 h) Preparation of the seminar paper (60 h) | The seminar discusses papers on asset pricing and market microstructure at an introductory PhD level | |
| Lecture/ Tutorial Advanced Financial Economics – Corporate Finance | 3 | 6; Class attendance (45 h) Literature study (90 h) Exam preparation (45 h) | The seminar discusses papers on corporate finance at an introductory PhD level | |
| Lecture Financial Markets Regulation (PhD Course) or | 2 | 6; Class attendance (30 h) Preparation for Courses (30 h) Literature Study (90 h) Exam preparation (30 h) | This course introduces students to the regulation of financial markets and the participants in these markets at the PhD level. Topics: Impact of financial disclosure requirements on corporate policies, financial market frictions, economics of financial crises | |
| Seminar Financial Markets Regulation (PhD Course) | 2 | 6; Class attendance (30 h) Literature study (90 h) Preparation of research proposals (60 h) | | |
| Module examinations | | Lectures: Written exams (60 or 90 min) Lecture or Seminar Financial Markets Regulation (Ph.D. Course): Written exam (120 min) or several research proposals Case Seminar: Case reports (80 %), presentations (20 %) Seminars Advanced Financial Economics II and III: Seminar paper (100 %) Other seminars: Seminar paper (80 %), presentations (20 %) | | |
| Duration of the module | | 🛛 1 Semester 🗌 2 Semester | | |
| Module can be started in | | ⊠ WS <u>or</u> ⊠ SS | | |

 Elective Module Business Administration:
 Study Points: 6

 Thesis Seminar Corporate Finance
 Responsible: Adam

Goals:

This seminar is designed for students who wish to write a master thesis at the institute of corporate finance. Most theses will be of an empirical nature. Therefore, sound econometrical and programming skills are essential. Before selecting this modul, students should have successfully completed the mandatory courses of the Mandatory Elective Modul: Financial Economics

| Course | Periods/ Week | SP; work load | Topics |
|---|------------------|--|--|
| Seminar Hauptsemin ar/Thesis Seminar Corporate Finance | 4 | 6; Seminar attendance (60 h) Literature study (30 h) Preparation, presentation and discussion of the seminar paper (90 h) | This course covers advanced topics in corporate finance, as well as major econometric techniques used in empirical corporate finance research. The goal is to prepare students for writing a master thesis at the Institute of Corporate Finance. |
| Module examinations | | Seminar paper (50 %), presentations (50 %) | |
| Duration of the module | | ☐ 1 Semester ☐ 2 Semesters | |
| Module can be | e started in | ⊠ Fall ⊠ Spring Se Semester <u>or</u> | nester |

| Elective Module Business Administration: | Study Points: 6 |
|--|-----------------|
| Thesis Seminar Financial Economics | |
| Responsible: Stomper | |
| | |
| Goals: | |

This seminar is designed for students who wish to write a master thesis in financial economics at the institute of financial economics. Most theses will be of an empirical nature. Therefore, sound econometrical and programming skills are essential. Before selecting this modul, students should have successfully completed the mandatory courses of the Mandatory Elective Modul: Financial Economics

| Course | Periods/ Week | SP; work load | | Topics |
|---|------------------|--|----------------------------|--|
| Seminar Hauptsemin ar/Thesis Seminar Financial Economics | 4 | 6; Seminar attendance (60 h) Literature study (30 h) Preparation, presentation and discussion of the seminar paper (90 h) | | Preparation for writing a master thesis. The seminar will discuss papers on financial economics. |
| Module examinations | | Seminar paper (50 %), presentations (50 %) | | |
| Duration of the module | | 🛛 1 Semester | ☐ 1 Semester ☐ 2 Semesters | |
| Module can be started in | | ⊠ Fall Semester <u>or</u> | Spring Seme | ster |

Elective Module Business Administration: Strategic Management Responsible: Hubert

Study Points: 6

Goals:

The course gives an introduction into the analytical tools of strategic analysis and applies these to decisions like boundaries of the firm, strategic interaction with competitors, market entry etc.

In the tutorials students solve exercises and discuss examples.

| Prerequisites to participate in the module: none | | | | | |
|--|------------------|--|----------------------|--|--|
| Course | Periods/ Week | SP; work load | SP; work load Topics | | |
| Lecture + Tutorial Strategic Management | 4 | 6; Attendance (60 h) Reading (30 h) Assignments (45 h) Preparation for tutorial sessions (15 h) Exam preparation (30 h) Basic notions of game theory, boundaries of the firm, strategic interaction with competitors and complementors, market entry, tools for analyzing strategic situations. | | | |
| Module examinations | | Written exam (90 | min) | | |
| Duration of the module | | 🛛 1 Semester | 2 Semester | | |
| Module can be started in | | 🛛 ws | □ ss | | |

Elective Module Business Administration: Financial Contracting Responsible: Hubert

Goals:

Derive fundamental relations between incentives, cash-flow rights and control rights from first assumptions (security design). Apply the insights from optimal contracts to more complex situations. The lecture provides an introduction into the main theoretical tools and some basic models of financial contracting. In class students solve exercises and discuss examples. In the seminar students apply the tools to selected problems and deepen their understanding by analyzing more complex situations.

| Prerequisites to participate in the module: A good background in microeconomics and game theory | | | |
|---|------------------|---|--|
| Course | Periods/ Week | SP; work load | Topics |
| Lecture Financial Contracting | 2 | 3; Attendance (30 h) Reading paper (30 h) Exam preparation (30 h) | Effort and risk incentives, security design, screening, optimality of debt and equity, moral hazard, signaling through capital structure, recontracting, control rights, number of creditors, voting rights. |
| Tutorial Financial Contracting | 2 | 3; Attendance (30 h) Preparation for Tutorial Sessions (15 h) Assignments (45 h) | number of creators, voting rights. |
| Seminar | 2 | 6; Attendance (30h), Preparation and Presentation of Seminar paper (150 h) | |
| Module examinations | | Lecture and Tutorials: Written Exam (60 minutes) Seminar: Seminar Paper (60%), Presentation (30%), active Participation (10%) of final mark | |
| Duration of the module | | ☐1 Semester ☐ 2 Semesters | |
| Module can be started in Image: Semester or Image: Semester or | | | ster |

| Elective Module Business Administration: Topics in Theory of | |
|--|--|
| Markets and Organizations I/II (Ph.D. – Level) | |

Responsible: Hubert

Goals:

The courses cover recent developments in the theory of coordination within organizations and markets. The focus is on research methodology.

Prerequisites to participate in the module: Solid background in microeconomics

| Course | Periods/ Week | SP; work load | Topics |
|--------------------------|------------------|--|---|
| Lecture 1 | 4 | 9; Attendance (60 h) Reading paper(120 h) Preparation of presentations and examination (90 h) | Agency problems, incentive contracts, performance measurement, multitask agency relationship, asset ownership and job design, executive compensation, contests, bargaining theory and coalition formation, merger analysis |
| Lecture 2 | 4 | 9; Attendance (60 h) Reading paper(120 h) Preparation of presentations and examination (90 h) | Vertical structures, hierarchies' und decision making in committees, bounded rationality, economic psychology and experiments. |
| Module examinations | | Lecture 1: Written exam (90 min, 50 %), Presentation (50 %) Lecture 2: Written exam (90 min, 50 %), Presentation (50 %) | |
| Duration of the module | | ☐ 1 Semester ☐ 2 Semesters | |
| Module can be started in | | Image: Semester or Image: Semester or | |

| | Elective Module Business Administration: Topics in Energy and | Study Poir |
|---|---|------------|
| | Network Economics | |
| I | | |

Responsible: Hubert

Goals:

In many countries network based supply systems (electric power and gas) have seen a major structural change from heavily regulated, vertically integrated monopolies towards systems in which coordination over markets and competition play a larger role. We take these industries as an example to analyze market design and strategic behavior.

Students should first take the lecture "network based energy systems". As an option they may complement the lecture with the seminar "energy systems" (presentations only) which is offered in parallel. In the following term, they can choose between one of the main seminars.

Prerequisites to participate in the module: The module is for students who have a (MA-level) background in microeconomics, industrial organization, and game theory. The courses "analysis of competition" in combination with "microeconomics" provides the necessary background.

| Course | Periods/ Week | SP; work load | Topics |
|--|------------------|---|---|
| Lecture and Tutorial Network based energy systems | 4 | 6 Attendance (60 h), Preparation (120 h) | Energy an overview, network based energy systems: gas & power, reform of the industry, restructuring and access rights, market design, gaming power markets, nodal pricing, zonal pricing, market coupling, strategic investment in international energy transport systems, energy security, investment and third party access, contracts and competition |
| Seminar A Energy Systems | 2 | 3; Attendance (30h), Preparation (60h) | Each student makes several presentations on different aspects of energy systems. The focus is on presentation skills. |
| Seminar B 'Gaming' and designing energy markets | 2 | 6; Attendance (30h), Preparation (150 h) | Students make presentations and write a thesis paper either on a theoretical topic or on an empirical assessment related to strategic behaviour in energy markets, usually starting from one academic paper. |
| Seminar B Energy Policy | 2 | 6; Attendance (30h), Preparation (150 h) | Students make presentations and write a thesis paper on a broader topic in energy policy. |
| Module examinations | | Lecture: Written examination, 90 minutes Seminar A: Presentation (70%), Discussion (30%) Seminar B: Seminar Paper (60%), Presentation (30%), Discussion (10%) | |
| Duration of the | e module | ⊠1 Semester □ 2 Semesters | |
| Module can be started in | | ⊠ Fall ⊠ Spring Semester Semester <u>or</u> | |

| Elective Module Business Administration: Real Estate Economics | |
|--|--|
| Responsible: Hubert | |

For most people buying or not buying a house is the single most important investment decision in their life. It is taken in an environment which is quite different from the "perfect market set up" which is often investigated in finance. Students shall learn how to address the particularities of real estate investments working with selected contributions from the theoretical and/or empirical literature.

Students are expected to write a seminar paper, make a presentation, and participate in the discussion.

Prerequisites to participate in the module: This seminar is for students who have a solid background in finance and econometrics and some basic knowledge in real estate economics. It covers a wide range of theoretical and empirical issues in real estate valuation, dynamics of real estate markets and institutional features.

| Course | Periods/ Week | SP; work load | | Topics |
|---------------------------------------|------------------|---|-------------|---|
| Seminar "Real Estate Economics" | 2 | 6; Attendance (30h), Preparation and Presentation of Seminar paper (150 h) | | Selected topics e.g.: Real estate prices and price risk, transaction behaviour, real estate in portfolio, renting versus owning, mobility, real estate and the aggregate economy |
| Module examinations | | Seminar Paper (70%), Presentation (30%) | | |
| Duration of the module | | ⊠1 Semester | 2 Semesters | |
| Module can be started in | | ⊠ Fall Semester <u>or</u> | Spring Seme | ster |

| Elective Module Business Administration: Analysis of Competition | Study Points: 6 |
|--|-----------------|
| Responsible: Hubert | |

The course covers models and tools for the analysis of strategic interaction with competitors and `complementors'. It is similar to a course in industrial economics, but topics are selected according to their relevance for the study of network based energy-systems (electric power and gas-industry).

The course is designed for students in their first semester master studies. It prepares students for the modul: "Topics in Energy and Network Economics".

Prerequisites to participate in the module: Previous exposure microeconomics and game theory is useful but not indispensable, as the basic notions of non-cooperative and cooperative game theory will be explained when needed.

You should not take the course if you already have taken (master level) courses in microeconomics, game theory and industrial organization.

| Course | Periods/ Week | SP; work load | Topics |
|---|------------------|--|---|
| Lecture and Tutorial Analysis of Competition | 4 | 6 Attendance (60 h), Preparation (120 h) | [°] Co-opetition' & PARTS, using market power, strategic interaction with competitors & complementors, market entry, commitment, vertical chains & networks, boundaries of the firm. |
| Module examinations | | Lecture: Written examination, 60 minutes | |
| Duration of the module | | □ 2 Semesters | |
| Module can be started in | | Fall Spring Semester | |

The lecture plus tutorial listed below are a mandatory course on advanced microeconomics. The course emphasizes a sample of topics ranging from the theory of competitive markets, to industrial organization, welfare economics, information, and incentives. The lectures are supplemented by problem solving exercises and in class presentations by participants.

Prerequisites to participate in the module: none

| Course | Periods/ Week | SP; work load | Topics | |
|---|------------------|---|---|--|
| Lecture Introduction to Advanced Micro- economic Analysis | 2 | 3; Attendance (30 h) Reading the relevant literature (60 h) | General Equilibrium; Partial Equilibrium; Externalities; Imperfect Competition; Asymmetric Information; Behavioral Aspects | |
| Tutorial Introduction to Advanced Micro- economic Analysis | 2 | 3; Attendance (30 h) Solve exercises and preparations for presentations in class (30 h) Exam preparation (30 h) | Exercises and model application | |
| Module examinations | | Written exam (90 min) | | |
| Duration of the module | | ☐ 1 Semester ☐ 2 Semesters | | |
| Module can be started in | | Semester | ster | |

| Elective Module Economics: Advanced International Trade Study Points: 6 Responsible: Strausz | | | | |
|---|---|---|--|---|
| Goals: | | | | |
| equilibrium ap returns and p | proaches to erfect comp analyses of | ernational trade theory at the adva modeling trading relations. Topics of etition, models of trade with variabl commercial policy, the political econo | overed include me e returns and imp | odels of trade with constant perfect competition, positive |
| Prerequisites t competition) | o participate | e in the module: Basics in Microecono | mics (general equi | librium, imperfect |
| Course | Periods/ Week | SP; work load | Topics | |
| Lecture/ Tutorial Advanced International Trade | 2 | 6; Attendance (60 h) Preparation (90 h) Exam preparation (30 h) | patterns of interr of trade policy, n | antage, outsourcing, national trade, instruments nonopolistic competition, olicy, economic geography, / |
| Module examinations | | Lecture/Tutorial: Written exam (90 min) | | |
| Duration of the | e module | I Semester I 2 Semesters | | |
| Module can be started in | | Fall Semester or Spring Semester | | |

The course reviews the main topics and models of the incentive theory. It focuses on the principal-agent paradigm where the principal delegates an action to a single agent through the take-it-or-leave-it offer of a contract. Major topics are represented by the problem of adverse selection, which occurs when the agent learns some piece of information relevant to the contractual relationship, and the problem of moral hazard, which appears as soon as the agent's actions are not observable. First, the trade-offs that emerge in these contexts are characterized: the rent extraction-efficiency trade-off under adverse selection and the trade-offs between the extraction of limited liability rent and efficiency and also between insurance and efficiency under moral hazard. Then, extensions of the basic framework to more complex environments are discussed. Mixed models with adverse selection, moral hazard and nonverifiability of the state of the world are also treated. Principal-agent models with adverse selection and moral hazard are finally considered in a dynamic context.

Prerequisites to participate in the module:

Basics in microeconomics "Introduction to Advanced Microeconomic Analysis" and "Game Theory"

| Course | Periods/ Week | SP; work load | | Topics |
|--|------------------|--|-----------------|--|
| Lecture + Tutorial Theory of Incentives | 4 | 3; Attendance (60 h) Preparation (90 h) Exam preparation (30 h) | | The Problem of Adverse Selection, Revelation Principle, Solution Techniques, Ex-Post vs. Ex-Ante Contracting, Limited Liability, The Problem of Moral Hazard, First-Order-Approach |
| Module examinations | | Written exam (90 min) | | |
| Duration of the module 🛛 1 Semester | | 🛛 1 Semester | 2 Semesters | |
| Module can be started in | | Fall Semester | Spring Semester | |

To gain a deeper understanding of the real and monetary aspects of European economic integration by applying theoretical concepts and using basic tools of empirical analysis.

The lecture course designed to introduce the student to both theoretical and applied issues involving the economic integration process in Europe. The convergence of standards of living, mobility of factors, the role of trade and technology, as well as the regulation of individual national economies will be discussed. In addition the growing constraints on European economic policy via monetary and fiscal integration of Europe will be examined.

Prerequisites to participate in the module: basic knowledge in Microeconomics and Macroeconomics

| Course | Periods/ Week | SP; work load | | Topics |
|--------------------------------|------------------|--|-----------------|-----------------------------------|
| Lecture | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | | Lectures on European Integration |
| Tutorial | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | | Tutorials on European Integration |
| Module examinations | | Lecture I: Written exam (90 min) | | |
| Duration of the module 🛛 1 Set | | 🛛 1 Semester | 2 Semesters | |
| Module can be started in | | ⊠ Fall Semester <u>or</u> | Spring Semester | |

| Elective Module Economics: Empirical Labor Economics | Study Points: 6 |
|--|-----------------|
| Responsible: Spitz-Oener | |

This course provides an overview on the economic analysis of labor markets. The emphasis is on applied microeconomics and empirical analysis. Topics to be covered include: labor supply and demand, human capital, education and training, changes in the wages structure and inequality, biased technological change and returns to skills, organizational change and skill demand, the closing gender gap. The introduction of topics will be on textbook level, but the focus will be on the discussion of empirical implementation strategies used in recent publications.

| Prerequisites to participate in the module: Acquaintance of intermediate microeconomics, labor economics, and econometrics is highly recommended. | | | | |
|--|------------------|--|-------------|---|
| Course | Periods/ Week | SP; work load | | Topics |
| Lecture/ Tutorial | 4 | 6; Participate in class (60 h) Home study/work (90 h) Exam preparation (30 h) | | labor supply and demand, human capital, education and training, changes in the wages structure and inequality, biased technological change and returns to skills, organizational change and skill demand, the closing gender gap |
| Module examinations | | Written exam (90 min) | | |
| Duration of the module | | 🛛 1 Semester | 2 Semesters | |
| Module can be | started in | d in 🛛 Fall 🗌 Spring Seme Semester | | ster |

Elective Module Economics: Decision-Making under Uncertainty

Study Points: 6

Responsible: Weizsäcker

Goals:

The goal of this course is to familiarize students with the most important models of economic decisionmaking under uncertainty. The course's initial part introduces state spaces and other general and basic concepts. The first part also describes how the most widely-used model, expected utility theory, relates to other models. The second part covers expected utility theory in depth, both under the assumption of known probabilities and the assumption of unknown probabilities. The third part generalizes to models of probability weighting (including Prospect Theory) and ambiguity preferences. Examples and exercises are covered in the lecture as well as in the tutorial.

Prerequisites to participate in the module: Basic knowledge in microeconomics as covered in "Introduction to Advanced Microeconomic Analysis"

| Course | Periods/ Week | SP; work load | | Topics | |
|--------------------------|------------------|--|---------------------|---|--|
| Lecture/ Tutorial | 4 | 6; Participate in class (60 h) Home study/work (90 h) Exam preparation (30 h) | | Uncertainty and preferences, risk versus uncertainty, Expected utility under risk and under uncertainty, Risk preferences under expected utility, Probability weighting under risk, Prospect Theory, Ambiguity preferences | |
| Module examinations | | Written exam (90 | min) | | |
| Duration of the module | | 🛛 1 Semester | emester 2 Semesters | | |
| Module can be started in | | Fall Semester | Spring Semester | | |

Elective Module Economics: Game Theory Responsible: Strausz

Study Points: 6

Goals:

The purpose of this course is to familiarize students with game-theoretic methods that are used in various fields of economics.

| Prerequisites to participate in the module: Module "Advanced Microeconomics". | | | |
|---|------------------|--|--|
| Course | Periods/ Week | SP; work load | Topics |
| Lecture | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Normal-form games, extensive-form games, games with incomplete information, standard solution concepts and refinements |
| Tutorial | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Exercises |
| Module examinations | | Written exam (90 min) | |
| Duration of the module | | ☐ 1 Semester ☐ 2 Semesters | |
| Module can be started in | | ☐ Fall Semester | |

This module gathers several seminars/lectures on selected topics in microeconomics. Lectures and seminars may be in English or German. Based on the basic knowledge acquired in "Advanced Microeconomics", this module shall enable students to study applications of microeconomic techniques and to analyze microeconomic problems in different fields of economics.

Prerequisites to participate in the module: Module "Advanced Microecomomics"

| Course | Periods/ Week | SP; work load | Topics |
|---|------------------|--|--|
| Lecture Advanced Microecono mic Analysis I (PhD) | 4 | 6; Attendance (60 h) reading (60 h) homework assignments and exam preparation (60 h) | Preferences, decision under certainty, theory of household and firm, general equilibrium. |
| Lecture Advanced Microecono mic Analysis II (PhD) | 4 | 6; Attendance (60 h) reading (60 h) homework assignments and exam preparation (60 h) | Decision under uncertainty, market power, strategic interaction, game theory, asymmetric information, incentives, mechanism design, contract theory. |
| Lecture Regulation in Product Markets | 2 | 3; Attendance (30 h) reading (30 h) homework assignments and exam preparation (30 h) | Antitrust and Merger Regulation; Price and Monopoly Regulation; Environmental Regulation; Regulation in Vertical Markets |
| Seminar Behavioral Economics | 2 | 6; Attendance (60 h) reading literature (60 h) writing and presenting a seminar paper (60 h) | Decision-making under risk and uncertainty, anticipatory utility and other variants of utility, biased expectations, experimental methods, empirical evidence |
| Seminar Microfinance | 2 | 6; Attendance (30 h) Group assignment (120 h) Presentation (30 h) | Microcredit, Microfinance, Microinsurance, Financial Repression, Credit Rationing, Transaction Costs |
| Seminar The Theory of Regulation under Asymmetric Information | 2 | 6; Attendance (30 h) reading literature, giving a presentation (75 h) writing a seminar paper (75 h) | Regulation, asymmetric information, monopoly, principal-agent problem. |

| Seminar | 2 | 6; Discussions (30 h) | Microeconometrics; Applied Microeconomics; | |
|--|------------|---|--|--|
| Empirical Methods in Applied Micro- economics | | Presentation preparation (30 h) Seminar paper preparation (120 h) | Public Policy | |
| Seminar Theory of Market Structure | 2 | 6; Attendance (30 h) Reading literature (60 h) Writing and presenting a seminar paper (90 h) | Institutions; Rational Expectations; Equilibrium; Financial Market | |
| Seminar Market Design | 2 | 6; Attendance (30 h) Reading literature (25 h) Writing a seminar paper (90 h) Preparing a presentation (35 h) | Theory: Introduction to market design and mechanism design, auctions, two-sided matching; Applications: cap-and-trade, electricity markets, school choice, position auctions, kidney exchange | |
| Seminar Advanced Experimenta I Economics | 3 | 6; Attendance (45 h) Reading literature (60 h) Writing a seminar paper and preparing a presentation (75 h) | Economic experiments, social preferences, non-equilibrium beliefs, quantal response equilibrium, econometric estimation | |
| Seminar The Economics of Identity and Ethnic Conflict | 2 | 6; Attendance (30 h) Reading literature (60 h) Writing a seminar paper and preparing a presentation (90 h) | Theory: club goods, economics of identity, economics of fractionalization Empirics: measuring conflict and fractionalization, experimental evidence | |
| Module examinations | | Written exam (90 min) after each of Regulation in Product Markets: writt Decision-Making under Uncertainty: Seminar Microfinance: Group assign Seminar Behavioral Economics: Ser Seminar The Theory of Regulation of paper, presentation Seminar Empirical Methods in Appli presentation (20 %) Seminar Market Design: Seminar p Seminar Advanced Experimental Eco presentation (20 %) | ten exam (90 min) : written exam (90 min) mment paper (70 %), presentation (30 %) minar paper (70 %), presentation (30 %) under Asymmetric Information: Seminar ed Microeconomics: Seminar paper (80 %), e: Seminar paper (80 %), presentation (20 aper (70 %), presentation (30 %) | |
| Duration of the | e module | ☐ 1 Semester ☐ 2 Seme | sters | |
| Module can be | started in | ☐ Fall Semester | | |

Responsible: Strausz

Goals:

The goal of this course is to familiarize students with the analysis of asymmetric information and with its economic effects. The course studies the role of asymmetric information in specific economic markets, such as labour and insurance markets. It shows how and why outcomes in these markets crucially depend on the underlying information structure between market participants. The course discusses the appropriate equilibrium concepts (rational equilibrium, perfect Bayesian equilibrium), the different type of market outcome (separation, pooling, hybrid), the Pareto inefficiencies that are due to asymmetric information, and the analytical complications of multiple equilibria.

Prerequisites to participate in the module: Basic knowledge in microeconimics "Introduction to Advanced Microeconomic Analysis" and "Game Theory"

| | - | | | |
|--|------------------|--|-------------|---|
| Course | Periods/ Week | SP; work load | | Topics |
| Lecture/ Tutorial Information Economics | 4 | 6; Participate in class (60 h) Home study/work (90 h) Exam preparation (30 h) | | Incomplete quality information (Lemons problem), Labour markets with asymmetric information (signaling, efficiency wages, equilibrium unemployment), Insurance markets with asymmetric information (screening), Credit markets with asymmetric information (rationing), Principal-Agent Problems |
| Module examinations | | Written exam (90 |) min) | |
| Duration of the module | | 🛛 1 Semester | 2 Semesters | |
| Module can be started in | | ⊠ Fall Semester | Spring Seme | ster |

Responsible: Kamecke

Goals:

This module teaches fundamental microeconomic concepts and tools on a very advanced level. Both lecture and exercises generate a considerable workload during the whole semester. Students are allowed to quit the course until the Christmas holidays if they find out that they overestimated their willingness and/or ability to understand demanding microeconomic analysis.

Prerequisites to participate in the module: none

| Course | Periods/ Week | SP; work load | Topics |
|--|------------------|---|--|
| Lecture "Advanced Microecono mics (PhD- level)" | 2 | 4,5; Attendance (30 h) Preparation of lecture and exams (105 h) | Theory of consumer, producer, perfectly competitive equilibrium, monopoly, introduction to game theory |
| Tutorial "Advanced Microecono mics (PhD- level)" | 2 | 4,5; Attendance (30 h) Preparation of problem sets and exams (105 h) | Theory of consumer, producer, perfectly competitive equilibrium, monopoly, introduction to game theory |
| Module examinations | | min will be split into 3-5 short tests tests are based on the lecture as w The results form the basis for the g | preparation the total examination time of 120 s written in selected exercise sessions. These well as on the problem sets discussed in class. grades of the module. A late registration tudents are free to skip the course after 50% |
| Duration of the module | | 1 Semester 2 Semesters | |
| Module can be started in | | ⊠ Fall ☐ Spring Seme Semester | ester |

| Elective Module Economics: Introduction to Advanced Macroeconomic Analysis | Study Points: 6 |
|---|-----------------|
| Responsible: Burda | |

Introduction to Advanced Macroeconomic Analysis (IAMA)

In this class, the students will learn the key tools for analyzing a variety of economic models and their policy implications. In particular, the students will learn

- tools of intertemporal optimization: Euler equations, dynamic programming
- econometric tools for analyzing economic data and their practical application, using software such as Eviews.

These tools will be applied to a variety of specific models and data sets in order to introduce the students into advanced macroeconomic analysis.

Prerequisites to participate in the module: none

| Course | Periods/ Week | SP; work load | | Topics | |
|-----------------------------------|------------------|--|-----------------|--|--|
| Lecture | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | | Key tools for macro- economic analysis and basic applications. | |
| Tutorial | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | | Exercises and literature review | |
| Module exami | nations | Written exam (60 min) | | | |
| Duration of th | e module | I Semester 2 Semesters | | | |
| Module can be started in Semester | | | Spring Semester | | |

Elective Module Economics: Advanced Monetary Economics Responsible: Weinke

Study Points: 6

Goals:

How to use dynamic stochastic general equilibrium models for positive and normative analysis.

| Prerequisites to participate in the module: IAMA | | | | | |
|--|------------------|--|---|--|--|
| Course | Periods/ Week | SP; work load | Topics | | |
| Lecture | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | The lecture develops a stochastic dynamic general equilibrium model featuring mono- polistic competition and sticky prices. Compared with the exposition in the course "Monetary Economics" more emphasis will be put on the technical aspects that one needs to understand in order to use this framework. We will also analyze some recent extensions of the baseline model that is at center stage in the course "Monetary Economics". | | |
| Tutorial | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | The tutorial helps understand the material of the lecture in different ways. First, some additional derivations of theoretical and empirical results are provided. Second, applications of the theory are illustrated. Third, some aspects of the practical implementation of monetary policy are discussed. | | |
| Module exami | nations | Written exam (90 min) | | | |
| Duration of the | e module | ☐ 1 Semester ☐ 2 Semesters | | | |
| Module can be | e started in | ⊠ Fall ⊠ Spring Ser Semester <u>or</u> | | | |

| Elective Mo Policy | odule Econo | Study Points: 6-12 | | | |
|--|--|---|--|--|--|
| Responsible: Burda / Spitz-Oener | | | | | |
| Goals: | | | | | |
| practical poli include: What determ How is labou How does se | cal functioning cymaking. A r nines the dema r compensate arch and mate | g of labour markets and labo number of relevant issues wi and for and supply of differe id, and which factors determ ching in the labour market w egarding unemployment ber | ill be examined in t ent types of labour ine the level of wa vork, and how can | this class. Examples in modern economies? ges? this matching process be | |
| covered are: What are the ones work be What are the consequence largely domin | examines soci e effects of var est and why? e consequence es of reforms of nated by public pociety provide | al policies as well as their ed rious intergenerational scher es of welfare reform? How ca of the health sector, the edu ic policy? insurance against labour m | mes for financing p an one analyze the cation sector or oth | pension systems? Which macroeconomic ner sectors which are | |
| education an and returns introduction empirical imp | II analysis of land training, chaton to skills, orgar of topics will b topementation | abour markets is applied to anges in the wages structure nizational change and skill do be on textbook level, but the strategies used in recent pul s will learn to work with Stat | e and inequality, bi emand, the closing e main focus will be blications. Exercise | iased technological change gender gap. The on the discussion of | |
| the legitimac This course h economics. S empirical and | cy of the applic has two goals. Second, the st alysis of curre | science. The validity of the o cation of economic theories . First, it covers basic metho udents become familiar with nt problems in economics. A C-Pool based on the software | to economic policy ds and techniques the typical line of as an integral part of | is an empirical question. of the empirical analysis in argumentation in the | |
| areas of labo master or do proposed by are expected | our economics octoral thesis. the instructor I to discuss th | aring students to present and . It may likewise be viewed Students are free to choose r. The topic is expected to be e relevant literature, data so cional details and to present | as a preparation for a topic themselves e in the field labour purces, methodolog | or an empirical diploma, s or to work on a topic r economics. Participants gy, to acquaint themselves | |
| Prerequisites | to participate | e in the module: none | | | |
| Course | Periods/ Week | SP; work load | Topics | | |
| Lecture I | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Lectures on Labo Policy | our Markets and Social | |
| Tutorial I | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Exercises, Discus | ssions, Literature Review | |

Exam preparation (30 h)

| Lecture II | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Lectures on Labour Markets and Social Policy | |
|------------------------|--------------|---|--|--|
| Tutorial II | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Exercises, Discussions, Literature Review | |
| Lecture III | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Lectures on Labour Markets and Social Policy | |
| Tutorial III | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Exercises, Discussions, Literature Review | |
| Lecture IV | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Lectures and integrated tutorial using Stata | |
| Seminar | 2 | 6; Discussions (45h) Presentation (45h) Seminar paper (90 h) | Discussions, Presentation, Writing of seminar paper | |
| Module examinations | | Lecture/Tutorial: Written exam (90 min) for each course Seminar: Seminar paper | | |
| Duration of the module | | ☐ 1 Semester ☐ 2 Semesters | | |
| Module can be | e started in | Fall Semester Spring Semester | | |

Elective Module Economics: Advanced Labour Economics Responsible: Burda

Goals:

To gain a deeper understanding of the functioning of labour markets at the level of a doctoral student aspiring to do research in the area

The lecture aims at broadening the understanding of labour supply by households and labour demand decision making by firms, and the influence of institutions on the labour market outcome. To this end, several fields of labour economics (human capital accumulation, wage determination, imperfect information) will be covered. In this module the student has the option of pursuing a more formal-theoretic approach to the subject. Like the module "Labour Economics" this module requires attendance of the basic lecture course "Labour Economics".

Marshallian analysis of the labour market and comparative statics; basic Hicksian concepts Labour demand and its determinants: Static and dynamic aspects Labour supply and its determinants: Static and dynamic aspects Human capital: Theory and empirical aspects Models of wages and wage determination Imperfect information in labour markets: Search, implicit contracts, efficiency wages Equilibrium models of unemployment and search

The economics of labour market institutions

The tutorials will revisit these models, cover their formal analysis in detail, and apply them to exercises. The advanced mathematical tutorial will help students to work with formal techniques necessary for success in a research career.

| Prerequisites to participate in the module: none | | | | |
|--|------------------|---|--|--|
| Course | Periods/ Week | SP; work load | Topics | |
| Lecture | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Theoretical Models of Labour Economics and their Empirical Application | |
| Tutorial | 2 | 3; Attendance (30 h) Preparation (30 h) Assignments (30 h) | Review of Models and Exercises | |
| Advanced Mathematic Tutorial | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | More formal treatment of models considered in lectures | |
| Module examin | nations | Written Exam for basic lecture (60 min); Written Exam for mathematical tutorial (60 min) | | |
| Duration of the | e module | ☐ 1 Semester ☐ 2 Semesters | | |
| Module can be | e started in | Fall Spring Semester Semester | | |

| | Elective Module Economics: Current Issues in Macroeconomics Study Points: 6- Responsible: Burda / Weinke | | | | | |
|-----------------|---|--|-------------------------------------|--------------------------|--|--|
| Goals: | Goals: | | | | | |
| This class prov | vides an in-c | lepth examination of current issues in | n macroeconomics. | | | |
| | | e in the module: Module "Introduction omics" or "Labour Markets and Socia | | roeconomics" and Module | | |
| Course | Periods/ Week | SP; work load | Topics | | | |
| Lecture | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Lectures on curre macroeconomics | ent issues in | | |
| Tutorial | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Exercises, Literat | ture Review, Discussions | | |
| Module exami | nations | Written exam (90 min) | | | | |
| Duration of th | ration of the module 🛛 1 Semester 🗌 2 Semesters | | | | | |
| Module can be | e started in | ☐ Fall ☐ Spring Semester Semester <u>or</u> | | | | |

| | Elective Module Economics: Topics in Macroeconomics Study Points: 6 Responsible: Burda / Weinke | | | | |
|----------------|---|---|------------------|----------|--|
| | . Builda / | | | | |
| Goals: | | | | | |
| This seminar a | aims to carry | out projects on selected topics in ma | acroeconomics. | | |
| | Prerequisites to participate in the module: Module "Introduction to Advanced Macroeconomics" or "Monetary and Fiscal Policy" or "Labour Markets and Social Policy" | | | | |
| Course | Periods/ Week | SP; work load | Topics | | |
| Seminar | 2 | 6; Attendance (30 h) Preparation for seminar and presentation (60 h) Seminar Project (90 h) | Topics in macroe | conomics | |
| Module exami | nations | Seminar Paper | | | |
| Duration of th | e module | ☐ 1 Semester ☐ 2 Semesters | | | |
| Module can be | e started in | | | | |

| Elective Module Economics: Advanced Macroeconomic Analysis I (PhD-level) | Stud |
|---|------|
| Responsible: Burda / Weinke | |

In this current research on dynamic economic models will be examined in detail to prepare students for doing research in macroeconomics and related fields. Depending on the approach examined, particular emphasis may be given to the theoretical or to the empirical aspects of the analysis. Examples are

- Modern variants of the neoclassical growth model
- Modern dynamic business cycle theories.
- dynamic models of matching on labor markets
- models of intergenerational trade (overlapping generations models)
- models of intertemporal choice
- facts and models of long run growth
- dynamic models of international trade
- econometric dynamic multivariate models regarding the interaction of major economic time series. The empirics of shocks driving the economy.
- econometric panel approaches regarding the functioning and the dynamics of labor markets
- numerical solution methods for linearized and non-linearized models.
- Models pertaining to asset markets and to the role of money.
- models of asset markets resulting from the intertemporal portfolio allocation problem
- models of money.
- The econometric evidence regarding the role of money and the role of monetary policy shocks.
- Models of the interplay between monetary and fiscal policy.
- Models of international exchange on goods and asset markets.

Prerequisites to participate in the module: none

| - | | | | | |
|----------------|------------------------|---|-----------------|--|--|
| Course | Periods/ Week | SP; work load | | Topics | |
| Lecture | 2 | 3; Attendance (30 h), Preparation (30 h), Exam preparation (30 h) | | Lectures on Advanced Economic Dynamics | |
| Tutorial | 2 | 3; Attendance (30 h), Preparation of exercises (30 h), Exam preparation (30 h) | | Exercises | |
| Module exami | nations | Written exam (90 min) | | | |
| Duration of th | Duration of the module | | 2 Semesters | | |
| | | ⊠ Fall Semester <u>or</u> | Spring Semester | | |

| Elective Module Economics: Advanced Macroeconomic Analysis II (PhD-level) | Study Points: 6 |
|--|-----------------|
| Responsible: Burda / Weinke | |

This is the second term of a two-term "first-year" sequence in macroeconomics, intended for master and doctoral students with a strong interest in academic research. It requires a solid background in mathematics. Strong emphasis will be placed on acquiring the key tools for advanced macroeconomic analysis suitable for pursuing PhD-level research. The following topics will be taught:

A2: Asset pricing; advanced preference theory such as Epstein-Zin; dynamic contracts and applications; growth models, OLG models;

B2: Money and models of price and wage rigidities; economic policy and time consistency, applied VAR analysis.

This will be complemented by deepening the knowledge regarding mathematical and econometric tools, such as MATLAB and/or EViews.

Prerequisites to participate in the module: Advanced Macroeconomic Analysis (Ph.D.). If approved by lecturer Introduction to Advanced Macroeconomic Analysis may also be accepted.

| Course | Periods/ Week | SP; work load | | Topics | |
|-----------------|---------------------------------------|--|-----------------|--|--|
| Lecture | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | | Key tools for macroeconomic analysis, advanced study of topics A2 and B2. | |
| Tutorial | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | | In-depth review, literature review and exercises | |
| Module exami | le examinations Written exam (90 min) | | min) | | |
| Duration of the | e module | ☐ 1 Semester ☐ 2 Semesters | | | |
| Module can be | e started in | Fall Semester | Spring Semester | | |

| Elective Module Economics: Current Research in Macroeconomics | | | | Study Points: 6 |
|---|------------------|--|--|-----------------|
| Responsible: Burda / Weinke | | | | |
| Goals: | | | | |
| This seminar aims to teach students to carry out projects at the current research frontier in macroeconomics. | | | | |
| Prerequisites to participate in the module: Module "Foundations of Advanced Macroeconomics" | | | | |
| Course | Periods/ Week | SP; work load | Topics | |
| Seminar | 2 | 6; Attendance (60 h) Preparation (60 h) Seminar Research Project (60 h) | Carrying out research projects in macroeconomics | |
| Module examinations | | Research Paper | | |
| Duration of the module | | □ 1 Semester □ 2 Semesters | | |
| Module can be started in | | ☑ Fall Semester <u>or</u> Semester | | |

| Elective Module Economics: Quantitative Macroeconomics and Numerical Methods (Ph.D. Level) | Study Points: 6 |
|--|-----------------|
| Responsible: Ebell | |

To learn a variety of solution methods for non-linear dynamic stochastic general equilibrium (DSGE) models, which are prominent in modern quantitative macroeconomics.

These solution methods may include, but are not necessarily limited to:

Log linearization

Higher order approximations

Policy function iteration

Value function iteration

In addition, students will learn calibration methods, that is, methods for choosing parameters for the DSGE models. In the practical part of the course (Tutorial), students will implement the solution methods taught in the course using Matlab. A brief introduction to Matlab will also be offered.

| Prerequisites | to | participate | in | the | module: | none |
|---------------|----|-------------|----|-----|---------|------|
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| Course | Periods/ Week | SP; work load | | Topics | |
|----------------|------------------|--|--|---|--|
| Lecture | 2 | 3; Attendance (30 h) Preparation (30 h) Homework (30 h) | | Solution methods for DSGE models in theory | |
| Tutorial | 2 | 3; Attendance (30 h) Preparation (30 h) Homework (30 h) | | Implementing solution methods for DSGE models in practice | |
| Module exami | nations | 3 homework assignments (take-home exams) | | | |
| Duration of th | e module | I Semester 2 Semesters | | | |
| Module can be | e started in | Fall Spring Semester Semester or | | | |

Elective Module Economics: Economic History Responsible: Wolf

Goals:

Economic history stresses the long-term perspective and the role of historical case studies for economic decision making. It offers new insights and allows the students to apply their knowledge of economic theory and empirical methods. The aim of the lectures is to give an overview over the economic history of the world, in particular of Europe and Germany. The seminars introduce the students to modern research in economic history. The discussion of recent publications enables students to devise own research questions and research designs for their master's thesis.

| rierequisites to participate in the module. None | | | | | |
|--|------------------|--|--|--|--|
| Course | Periods/ Week | SP; work load | Topics | | |
| Lecture/ Tutorial European Economic History I | 4 | 6; Attendance (60 h) Preparation (60 h) Exam preparation (60 h) | European Economic History 1800 - 1914 | | |
| Lecture/ Tutorial European Economic History II | 4 | 6; Attendance (60 h) Preparation (60 h) Exam preparation (60 h) | European Economic History 1914 – up to now | | |
| Seminar | 2 | 6; Attendance (30 h) Preparation (60 h) Presentation (30 h) Seminar paper (60 h) | The seminars cover key topics in European economic history, ranging from methods of modern research in economic history, over economic crises to long-run economic developments, and specific historical case- studies. | | |
| Seminar Data Management and Empirical Economics | 2 | 6; Attendance (30 h) Preparation (60 h) Presentation (30 h) Seminar Paper (60 h) | This research seminar deals with information systems used in Economic history, such as statistical software, database management systems and geographical information systems. | | |
| Module exami | nations | Lectures: Written exam (90 min) Seminars: Seminar paper (70%), p | presentation (30%) of final mark | | |
| Duration of th | e module | I Semester 2 Semesters | | | |
| Module can be | started in | n 🛛 Fall 🖾 Spring Semester Semester <u>or</u> | | | |

Prerequisites to participate in the module: none

| Elective Mod and Empiric | | Trade: Theory | Study Points: 6 | | | | |
|---|-------------------|--|--------------------------------------|--|--|--|--|
| Responsible | Responsible: Wolf | | | | | | |
| Goals: | | | | | | | |
| Ricardian and | Heckscher-C | terns of international trade, both in th Dhlin trade models, students will be ir 2 (2003) and Melitz & Ottaviano (2008 | ntroduced to mode | | | | |
| Prerequisites t | o participate | e in the module: Basics in both micro | and macro econor | nics | | | |
| Course | Periods/ Week | SP; work load | Topics | | | | |
| Lecture/ Tutorial Advanced International Trade: Theory and Empirics | 2 | 6; Attendance (60 h) Preparation (60 h) Exam preparation (60 h) | trade model, Eat Melitz-Ottaviano | nodel, Heckscher-Ohlin on-Kortum trade model, trade model, economic history, economic | | | |
| Module examinations | | Lecture/Tutorial: Written exam (90 min, 70%), Presentation (30%) | | | | | |
| Duration of the module I Semester I 2 Semesters | | | | | | | |
| Module can be started in 🛛 Fall Semester <u>or</u> 🛛 Spring Semester | | | | | | | |

| Elective Moo Responsible | | | Study Points: 6 | | | |
|---|--|--|-----------------|------------------|---|--|
| developed by and geography clustering of ir | Goals: The students will be introduced to the vast literature on Spatial Economics. The course starts with ideas developed by Von Thünen and Krugman leading to modern theories on the interaction between economics and geography. We will introduce models and empirics for topics such as international specialization, the clustering of industries, the spatial pattern of economic growth, and the relationship between core and periphery within economic regions. | | | | | |
| Prerequisites t | to participate | e in the module: Basics | in both micro | and macro econor | nics | |
| Course | Periods/ Week | SP; work load | | Topics | opics | |
| Seminar Spatial Economics | 2 | 6; Attendance (60 h) Presentation (30 h) Seminar paper (90 h) |) | | ery, Increasing returns to costs, Law of one price, alization | |
| Module examin | nations | Seminar: Seminar paper (70%), Presentation (30%) | | | | |
| Duration of the | e module | ☐ 2 Semesters | | | | |
| Module can be | e started in | Fall Semester or | Spring Ser | mester | | |

| Elective Mo Responsible | Study Points: 6-15 | | | |
|--|--------------------|--|---|---|
| Goals: | | | | |
| To learn abou | t advanced t | opics of Public Economics in the cutti | ng point of govern | ment and markets |
| Prerequisites | to participate | e in the module: none | | |
| Course | Periods/ Week | SP; work load | Topics | |
| Lecture/ Seminar Elemente der Finanz- wissenschaft I (German) | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) or Attendance (30 h) Exam paper (30 h) Preparation of presentation (60h) | Various aspects o | of Public Economics |
| Lecture/ Seminar Elemente der Finanz- wissenschaft II (German) | 4 | 6; Attendance (60 h) Preparation (60 h) Exam preparation (60 h) or Attendance (60 h) Exam paper (60 h) Preparation of presentation (60h) | Various aspects o | of Public Economics |
| Lecture Theory of Taxation | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Tax incidence Tax shift Optimal taxation Public Enterprise | Pricing |
| Lecture Theory of Social Choice | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Collective decisio Distributive justic | ns, Impossibility theorems, ce, Bargaining |
| Lecture Welfare Theory | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Welfare Theory, Analysis | Foundations of Cost Benefit |
| Lecture Theory of Social Policy | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | public insurance | res, justice and efficiency, (e.g. health and nsurance) and redistribution. |
| Lecture Environment al and Resource Economics | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | Pollution, Renewa Resources, Enviro | able Resources, Exhaustible onmental Policy |

Environmental Economic Policy

Lecture

Environment al Economic Policy 2

3;

Attendance (30 h) Preparation (30 h) Exam preparation (30 h)

| Lecture The theory of optimal extraction of natural resources | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | The course is an introduction to the theory of the optimal extraction of natural resources. |
|--|--------------|--|--|
| Lecture Developmen t Economics | 2 | 3; Attendance (30 h) Preparation (30 h) Exam preparation (30 h) | The course is an introduction to the principles of Development Economics |
| Seminar Ökonomie und Sprache (German) | 2 | 6; Attendance (30 h) Exam paper and presentation (90 h) Exam preparation (60 h) | Schnittstelle zwischen Ökonomie und Sprache, Soziolinguistik, Ökonomie der Sprache |
| Seminar Environment al and Resource Economics | 2 | 3; Attendance(30 h) Seminar paper (30 h) Preparation of presentation (30h) | Pollution, Renewable Resources, Exhaustible Resources, Environmental Policy |
| Seminar Empirical Distribution Analysis | 4 | 6; Attendance (60 h) Seminar paper (60 h) Preparation of presentation (60h) | This course aims at introducing empirical methods of distributional analysis. |
| Seminar Developmen t Economics | 4 | 6; Attendance(60 h) Preparation of presentation (30h) Case Study (90 h) | Development Economics; influence of trade, distribution, institutions, factor mobility on development; policy analysis |
| Seminar Selected Topics in Developmen t Economics | 2 | 3; Attendance (30 h) Preparation of presentation I (10 h) Seminar paper (30 h) Preparation of presentation II (20 h) | Individual research papers based on background knowledge in development economics |
| Module examin | nations | study (if requested 33%)) | %) homework (if requested 33%) , presentation (33%), written exam/case Presentation (if requested, 25%), case study |
| Duration of the | e module | ☐ 1 Semester ☐ 2 Semesters | |
| Module can be | e started in | ☑ Fall ☑ Spring Seme Semester or | ster |

| 45035, Social Preferences Leistungspunkte: | | | | | | | |
|---|--|--|--|---|--|--|--|
| The students - know key experim - can apply the most their limitations - can contribute to the - are able to explain | know key experimental evidence on social preferences can apply the most important models of social preferences to explain key experimental results and know | | | | | | |
| KnowledgeKnowledge | n to Advanced Microeconom of elementary game theory of statistical analysis will m thus enable a more critical | ake it easier to follow | / the data ana | alysis in the experimental | | | |
| Teaching formats | Hours per week, workload in hours | Credits and preconditions for granting | Topics, con | tents | | | |
| Lecture Social Preferences – Theories and Evidence | 2 SWS 60 hours 25 hours presence in class, 35 hours preparation and learning | 3 credits, participation | - Mo an - Te: pro - Mu an pro - Re of soo - Ap | perimental evidence of cial preference idels of social preferences d their applications sting models of social eferences litiplicity of fairness norms d heterogeneity of social eferences levance and generalizability laboratory experiments on cial preferences plications to economic eory | | | |
| Tutorial Social Preferences – Theories and Evidence | 2 SWS 60 hours 25 hours presence in class, 35 hours preparation and learning | 2 credits, participation | lite ap | scussions of further erature, examples, and plications of the topics from e lecture | | | |
| Final exam | <u>60 hours</u> Exam Social Preferences – Theories and Evidence (90 min) and preparation | xam Social PreferencesExam Social Preferences – Theories and Evidence, passTheories and Evidencepass90 min) andPreferences – Theories and Evidence, pass | | | | | |
| Duration | ☐ 1 semester ☐ 2 semester | | | | | | |
| Start of Module | 🛛 winter term | | | | | | |

| Elective Mo in Law | odule Econo | conomics and | Study Points: 6 | | |
|---|--|--|------------------------------------|-------------------------|--|
| Responsibl | e: Blankart | / Kirchner | | | |
| Goals: | | | | | |
| applications of Seminar: The seminar distinction is The seminar Students sho | To understand the economic theory of law as a two stage process of collective decisions on law and the applications of law in markets as well as in governments. Seminar: The seminar is aimed at analyzing the institutional rules governing private markets and the state. A distinction is made between decisions on rules and decisions within rules. The seminar is interdisciplinary held jointly by a professor of economics and a professor of law. Students should write essays applying theoretical economic thought to practical problems of legislation. Special attention should be given to an economic analysis of agents in government. | | | | |
| Prerequisites | to participate | e in the module: Module "Public Finan | ce and Public Choi | ce I" | |
| Course | Periods/ Week | SP; work load | Topics | | |
| Seminar | 3 | 6; Attendance (45 h) Preparation and presentation (60 h) Writing essays (75 h) | Case Studies in t Law and State | he Economic analysis of | |
| Module exam | Module examinations Essays (80%), presentation (20%) | | | | |
| Duration of th | Duration of the module I Semester I 2 Semesters | | | | |
| Module can b | e started in | Fall Spring Semes Semester | ster | | |

| Elective Module Economics: Applied Microeconomics: Competition Policy | Study Points: 6 |
|---|-----------------|
| Responsible: Kamecke | |

The participants in this module understand the structure of elementary models in industrial organization and learn how to discuss issues in competition policy with the help of such models. For this purpose the model structure, results and policy implications are presented in the lecture. The exercises concentrate on a thorough discussion of the theoretical models used in the lecture and on their modification for a policy analysis. The students learn to develop simple models to address selected questions of competition policy.

Prerequisites to participate in the module: none

| | | r | | | |
|-----------------------------------|------------------|--|---|--|--|
| Course | Periods/ Week | SP; work load | Topics | | |
| Lecture Competition Policy | 2 | 3; Attendance (30 h) Preparation of lecture (40 h) preparation of exam (20 h) | Neoclassical welfare theorems; normative results of static (SCP, dynamic price competition, vertical restraints) and dynamic (patent races, endogenous growth theory) industrial organization theory. | | |
| Tutorial Competition Policy | 2 | 3; Attendance (30 h) Preparation of exercises (60 h) | Practice of the theoretic analysis of policy question with the help of simple examples. | | |
| Module exami | nations | Written exam (90 min) | | | |
| Duration of the | e module | 🛛 1 Semester 🗌 2 Semest | nester 2 Semesters | | |
| Module can be | e started in | ☐ Fall | Spring Semester | | |

Elective Module Economics: Selected Topics in Competition Policy St Responsible: Kamecke

Study Points: 6

Goals:

The participants get to know selected parts of the theory of industrial organization with a special emphasis on their implications for the European competition law. They learn to use formal results in a discussion of controversial political issues. To prepare for this the lecture introduces fundamental theoretical concepts and their application as well as the relevant parts of the competition law. This lecture is concentrated on the first part of the term. In the second part of the term the students demonstrate in their seminar presentations that they understand this method of economic analysis.

| Prerequisites to participate in the module: Module "Applied Microeconomics" | | | |
|---|------------------|---|--|
| Course | Periods/ Week | SP; work load | Topics |
| Lecture | 1 | 1,5; Attendance (15 h) Preparation (10 h) exam preparation (20 h) | One of the topics: cartel prohibition, abuse control, and merger control in the European or German Competition law |
| Seminar | 2 | 4,5; Attendance (30 h) Seminar paper and presentation (105 h) | Discussion of selected problems of compe- tition policy, case studies, modelling issues and/or changes of the law |
| Module examinations | | Lecture: Written exam (60 min); Seminar: Paper (80 %), presentation (20 %) | |
| Duration of the module | | ☐ 1 Semester ☐ 2 Semesters | |
| Module can be started in | | Fall Spring Semester | |

Elective Module Economics: Topics in Industrial Organization Responsible: Kamecke

Goals:

In each lecture or seminar the participants study one aspect of industrial organization. In empirical industrial organization they are introduced to theory-based empirical model building in core areas of industrial economics and learn how to implement empirical studies using micro-econometric methods and real-market data. In "Cartel law" they are introduced to the European and German antitrust legislation from an economic point of view. In the seminar "actual problems of economic policy" the participants analyze selected topics discussed in the popular press which are related to the insights from one of these lectures, while the seminar "Applied Industrial Organization" discusses various issues in the field of industrial organization. In this module it is also possible to get credit for courses from the module "topics in microeconomics" or from further courses in the field of industrial organisation which the candidate passed in other universities.

Prerequisites to participate in the module: Module "Applied Microeconomics"

| Course | Periods/ Week | SP; work load | Topics | |
|---|-------------------|---|---|--|
| Lecture Empirical Industrial Organization | 2 | 3; Attendance (30 h) Preparation (20 h) Exam preparation (40 h) | Structural approach in industrial economics; analyses of firm behaviour in dynamic markets. | |
| Tutorial Empirical Industrial Organization | 2 | 3; Attendance (30 h) Preparation (20 h) Exam preparation (40 h) | Empirical model building and micro- econometric methods; computer implementation using real-market data. | |
| Lecture Cartel Law for Economists | 2 | 3; Attendance (30 h) Preparation (20 h) Exam preparation (40 h) | European and German cartel law from an economic perspective. (So far this lecture has always been taught in German.) | |
| Seminar "Aktuelle Probleme der Wirtschaftsp olitik – Thema Umwelt" (German) | 2 + field trip | 6; Seminarteilnahme (30 h), Anfertigung und Präsentation von Seminararbeit (60 h) Exkursion (60 h + 30 h Vor- und Nachbereitung) | Diskussion von ausgewählten Themen aus dem Bereich Umweltökonomik und –politik. | |
| Seminar Applied Industrial Organization | 2 | 3; Attendance of seminar (30 h) Seminar paper and presentation (60 h) | Discussion of selected problems of industrial organisation, case studies, experimental evidence, modelling issues and/or changes of the institutional environment. | |
| Module examinations | | Lectures: Examination (60 min, 90 min if exercises and lecture are examined); Seminar: Seminar paper and presentation | | |
| Duration of the | e module | ☐ 1 Semester ☐ 2 Semesters | | |
| Module can be started in | | ⊠Fall Semester <u>or</u> ⊠ Spring Semester | | |

Elective Module Economics: Datengrundlagen der Study Points: 6 Wirtschaftspolitik (DGWP) **Responsible: Schmerbach** Goals: The seminar will be held in German. Im Vordergrund des Gesamtkonzeptes stehen das Wecken des Interesses der Studierenden für statistische Fragestellungen und Probleme in Politik und Wirtschaft, die Vermittlung der Arbeitsweise der amtlichen und nichtamtlichen Datenproduzenten auf nationaler, europäischer und internationaler Ebene, die Qualität und Aussagefähigkeit ökonomischer Daten, der kompetente und verantwortungsvolle Umgang mit verfügbarem Datenmaterial aus amtlichen, nichtamtlichen und medialen Datenguellen eigenständige Datenrecherchen, selbständige wissenschaftliche Arbeit mit amtlichen und nichtamtlichen Originaldaten unter Einbeziehung statistischer Methoden zur Bereitstellung von Informations- und Entscheidungsgrundlagen, Hinweise zum Einsatz moderner Computerprogramme. Prerequisites to participate in the module: Module "Statistics" Periods/ Course SP; work load Topics Week Seminar 3 Bevölkerungsstatistik, Arbeitsmarktstatistik, 6: Attendance (45h) Produktionsstatistik, Konjunkturtests, DGWP Preparation and presentation Verbraucherpreisstatistik (Messung der Teuerung), Expertenvorträge und Ko-(65h) Seminar paper (70h) Referate zu Themen des Seminars, Problemdiskussionen Seminar paper (70 %), presentation (30 %) Module examinations 1 Semester Duration of the module 2 Semesters

Spring Semester

Module can be started in

🛛 Fall

Semester or

| Elective Module QM: Operations Research | |
|---|--|
| Responsible: N.N. | |

The "Elective Module Operations Research" (for master students) is composed of fundamental and advanced courses as well as special topic courses and seminars. It offers the opportunity to become a specialist in Operations Research applications. The basic courses (OR I and OR II) cover classical material on linear and nonlinear programming. The advanced courses (OR III and OR IV) are devoted to dynamic programming and applied project work. They aim to provide students with the opportunity to gain enhanced theoretical knowledge and theory oriented as well as applied project experience. As part of the module special topic courses on a variety of business management specializations are offered, e. g. Revenue Management, Operational Risk Management, Operations Management, Financial Engineering, Queueing theory, inventory theory, logistic and supply chain management, simulation studies, stochastic modelling and optimization algorithms, etc. Within special seminars students will learn to use and to apply OR-software packages.

Prerequisites to participate in the module: none Periods/ SP; work load Topics Course Week **Basic Lectures** 3 Lecture/ 4.5: Simplex algorithms, theory on duality and sensitivity analysis, production-, cutting-Tutorial Attendance (45 h) Preparation and homework stock and blending problems, staffing and OR I assignments (60 h) scheduling problems, guadratic optimization Exam preparation (30 h) 3 Integer programming with the view towards Lecture/ 4.5: Attendance (45 h) Tutorial applications, knapsack problem, Preparation and homework transportation and assignment problems. OR II assignments (60 h) network flow optimization and project Exam preparation (30 h) planning Advanced Lectures Lecture/ ર 4.5: Deterministic and stochastic dynamic Tutorial Attendance (45 h) programming; solution algorithms, business Preparation and homework and economic applications OR III assignments (60 h) Exam preparation (30 h) 3 Lecture/ 4,5; Lectures based on research articles, Attendance (45 h) presentation of thesis and project work Seminar Preparation, presentation and OR IV homework assignments (30 h) Project work (60 h) Special lectures

Every lecture 3 4,5; There will be special lectures on OR topics marked as Attendance (45 h) every semester. Special OR Preparation and homework lecture in the assignments (60 h) university Exam preparation (30 h) calendar Seminars 2 Software in 6; Introduction into the usage of, e. g. AMPL, Operations Attendance (30 h) OPL, AIMMS, NEOS, etc.; syntactic elements Research Preparation (30 h) of model languages; linear, piecewise linear,

| | | Seminar paper and presentation (90 h + 30 h) | quadratic and integer valued optimization problems |
|--------------------------|---|--|--|
| Software project | 2 | 3; Implementation, documentation und presentation (90 h) | Developing software packages; long term projects |
| Research Seminar | 2 | 3; Attendance (30 h) Reports and presentation (60 h) | Lectures on research projects |
| Module examinations | | Lecture/Tutorial OR I: Written exam (120 min, 100 %) or written exam (120min, 80 %) + homework assignments (20 %) Lecture/Tutorial OR II: Written exam (120 min, 100 %) or written exam (120min, 80%) + homework assignments (20 %) Lecture/Tutorial OR III: Written exam (120 min, 100 %) or written exam (120min, 80 %) + homework assignments (20 %) Lecture/Seminar OR IV: Homework assignments (20 %), presentation (40 %) and project work (40 %) or presentation (30 %) and seminar paper (70 %) Seminar Software in OR: work reports (50 %), presentation (40 %), exercises (10 %) Seminar Softwareproject: reports (30 %) and software with software documentation (70 %) Lecture/Tutorial OR Special: Written exam (120 min, 80 %) and homework assignments (20 %) or written exam (100 %) or oral exam (100 %) | |
| Duration of the module | | ☐ 1 Semester ☐ 2 Semesters | |
| Module can be started in | | Image: Semester Semester | |

Elective Module QM: Multivariate Statistical Analysis Responsible: Härdle

Goals:

Data records which are to be analysed by means of statistics often consist of many variables. While the connections between two variables are easily accessible, a group of several variables is not easily examinable in its structure. "Multivariate statistics" imparts procedures which allow an analysis of high-dimensional data records. The course aims to introduce the basic concepts of statistical programming languages as R or Matlab and its application.

Prerequisites to participate in the module: Knowledge of basis statistical concepts and an understanding of a broad spectrum of statistical methods for data analysis.

| Course | Periods/ Week | SP; work load | Topics | |
|--|------------------|--|---|--|
| Lecture Multivariate Statistical Analysis I (MVA1) | 4 | 6; Attendance (60 h) Self-study (60 h) Exam preparation (60 h) | MVA1: Graphical display of multidimensional data, Repetition: matrix algebra, linear model, correlation, Multivariate random variables, Multinormal distribution, Maximum likelihood theory, Principal components, Discriminant Analysis, Cluster Analysis. | |
| Lecture Statistical programmin g languages (XIC) | 2 | 3; Attendance (30 h) Self-study (30 h) Exam preparation (30 h) | Data Analysis and programming statistical algorithms in the programming languages R or Matlab | |
| Module examinations | | MVA1: written exam (120 min) or working paper and eventually presentation or homework XIC: oral exam (30 min) or written exam (90 min) or working paper and eventually presentation or homework | | |
| Duration of the module | | ☐ 1 Semester ☐ 2 Semesters | | |
| Module can be started in | | Image: Semester Semester | | |

The courses and lectures will give the students a thorough insight into theoretical aspects as well as practical aspects of advanced statistical methods (R, Matlab and/or SPSS). The lectures cover different aspects in statistics:

- The course Statistical Programming Languages aims to introduce the basic concepts of statistical programming languages as R or Matlab and its application.

- The course Non- and Semiparametric Modelling gives an overview over the flexible regression methods. - The lecture Multivariate Statistical Analysis 2 further develops methods presented in the first part of the lecture and deals with problems which arise in the analysis of real world data as well as some advanced methods. In the tutorial the students apply the methods to multivariate data with statistical software.

- The lecture Selected Topics in Banking and Insurance deals with specific topics connected either with Banking (e.g. the issues of assessment of the quality of a credit to its risk of defaults) or Insurance (e.g. with claim size distributions, ruin problems, heavy tailed risks, premium, principles and risk measures and loss reserving in insurance).

- The seminar Numerical Introductory Course treats problems which arise in the implementation of statistical methods, e.g. Optimization.

- In the seminar What is statistics? – From the historical perspective historical aspects of the development of statistics will be treated.

- The lectures Data analysis I and II focus on practical steps in data analysis with SPSS and R. We cover various topics in uni-, bi- and multivariate descriptive statistics, tests and regression methods.

- The lecture Statistics of High-Dimensional Time Series provides an overview of statistical methods used for the analysis of high-dimensional time series.

Prerequisites to participate in the module: Knowledge of basis statistical concepts and an understanding of a broad spectrum of statistical methods for data analysis and the module "Multivariate Statistical Analysis"

| Course | Periods/ Week | SP; work load | Topics |
|---|------------------|---|--|
| Lecture Statistical programmin g languages (XIC) | 2 | 3; Attendance (30 h) Self-study (30 h) Exam preparation (30 h) | Data Analysis and programming statistical algorithms in the programming languages R or Matlab |
| Lecture Non- and Semiparame tric Modelling (NPM) | 2 | 3; Attendance (30 h) Self-study (30 h) Exam preparation (30 h) | NPM: Histogram, Nonparametric Density Estimation, Nonparametric Regression, Additive Models, Linear Models, Generalized Linear Models, Additive Models, Single-Index Models, Generalized Partial Linear Models, Generalized Additive Models |
| Lecture Multivariate Statistical Analysis II (MVA2) | 2 | 3; Attendance (30 h) Self-study (30 h) Exam preparation (30 h) | MVA2: decomposition of data matrices by factors, Factor analysis, Multidimensional scaling, Canonical correlations, Correspondence analysis, Projection pursuit, Conjoint measurement analysis, SIR |
| Tutorial Multivariate Statistical Analysis II (UE MVA2) | 2 | 3; Attendance (30 h), Preparation for tutorial sessions (30 h), Solving problem sets (30 h) | UE MVA2: The tutorial aims at practical exercises done with statistical software packages (R, SPSS, Matlab). |
| Lecture Selected | 2 | 3; Attendance (30 h) Self-study (30 h) | SCR: Selected Topics either in Banking, e.g. Credit rating, or Insurance. For details see the commented schedule of lectures. |

| Topics in Banking and Insurance (SCR) | | Exam preparation (30 h) | | |
|--|---|---|---|--|
| Seminar Numerical Introductory Course (NIC) | 2 | 3; Attendance (30 h) Self-study (30 h) Exam preparation (30 h) | NIC: Numerical Linear Algebra, Curve Fitting, Optimization, Random Number Generation, Numerical Solutions of Stochastic Differential Equations | |
| Seminar What is statistics? – From the historical perspective (HIST) | 2 | 3; Attendance (30 h) Self-study (30 h) Exam preparation (30 h) | HIST: In the seminar we will investigate elements of the history of statistics, mathematical statistics as well as economical statistics, from the 17th/18th century until the present time. | |
| Seminar Privatissimu m Statistik (PRI) | 2 | 3; Attendance (30 h) Preparation of presentation (10 h) Seminar paper (50 h) | PRI: The seminar is a preparation for master thesis. | |
| Vorlesung Datenanalys e I | 2 | 3; Präsenzzeit (30 h) Selbststudium (30 h) Prüfungsvorbereitung (30 h) | DAT1: Wdh. Statistik I&II, Fragebogen- konstruktion, Datenbereinigung, Ausreißer, Fehlende Werte, Univariate und Bivariate Statistik (Grafiken, Kennzahlen und Tests) | |
| Übung Datenanalys e I (UE DAT1) | 2 | 3; Präsenzzeit (30 h) Selbststudium (30 h) Prüfungsvorbereitung (30 h) | UE DAT1: In der Übung werden praktische Aufgaben zum Vorlesungsstoff mit SPSS und/oder R gelöst. | |
| Vorlesung Datenanalys e II | 2 | 3; Präsenzzeit (30 h) Selbststudium (30 h) Prüfungsvorbereitung (30 h) | DAT2: Multivariate Statistik, Lineare Regression, Nicht- und semiparametrische Regression, Item-Response-Modelle, Strukturgleichungsmodelle. | |
| Übung Datenanalys e II (UE DAT2) | 2 | 3; Präsenzzeit (30 h) Selbststudium (30 h) Prüfungsvorbereitung (30 h) | UE DAT2: In der Übung werden praktische Aufgaben zum Vorlesungsstoff mit SPSS und/oder R gelöst. | |
| Seminar Datenanalys e (DAT) (German) | 2 | 3; Attendance (30 h) Preparation of presentation (10 h) Seminar paper (50 h) | DAT: Das Seminar richtet sich an Studierende, die einen konkreten Datensatz mittels statistischer Methoden (z.B. im Rahmen von Projekt- oder Abschlussarbeiten) analysieren wollen. | |
| Lecture Statistics of High- Dimensional Time Series (STS) | 2 | 3; Attendance (30 h) Self-study (30 h) Exam preparation (30 h) | Topics include: the dynamic semiparametric factor model, statistics of multivariate time series models, non-parametric and flexible time series estimation, variable selection and empirical pricing kernel estimation. | |
| Module examinations | | XIC, NPM, MVA2/UE MVA2, SCR, DAT1, DAT2, STS: Oral exam (30 min) or written exam (90 min) working paper and eventually presentation or homework NIC, HIST, PRI, DAT: Working paper (80%) and presentation (20%) | | |
| Duration of the module | | ☐ 1 Semester ☐ 2 Semesters | | |

| Module can be started in | 🛛 Fall | Spring Semester |
|--------------------------|--------------------|-----------------|
| | Semester <u>or</u> | |

The course "Statistics of Financial Markets 1" starts with an introduction into the basic concepts of option pricing and its probabilistic foundations. Next, stochastic processes in discrete time are presented and the Wiener process is introduced. Ito's Lemma is derived and the Black-Scholes (BS) Option model is presented leading to the analytic solution for the BS Option price. Numerical solutions via binomial or trinomial tree constructions are discussed in detail.

The course "Statistics of Financial Markets 2" starts with an introduction into the basic concepts of time series and its application. The course gives an overview over risk management models and reviews the current value at Risk (VaR) methodology.

The course "Selected topics of mathematical statistics" covers a part of mathematical statistics which deals with the limiting behavior of different sample statistics, *U*-statistics, *M*-, *L*- and *R*-Estimates. It is laying a bridge between the probability theory and the mathematical statistics by manipulating with "probability" theorems to obtain "statistical" theorems.

The Seminar "Mathematical Statistics" allows for the presentation of research results from the discipline of mathematical statistics. The Seminar "Economic Risk" allows for the presentation of research results from the discipline of Quantitative Finance.

The lecture "Statistical Tools for Finance and Insurance" introduces modern statistical tools as applied to finance and insurance. Each part of the lecture contains content with a high focus on practical applications. The course entitled "Advanced Methods in Quantitative Finance" covers material that is beyond the scope of the course "Statistics of Financial Markets".

Prerequisites to participate in the module: Knowledge of basis statistical concepts and an understanding of a broad spectrum of statistical methods for data analysis.

| Course | Periods/ Week | SP; work load | Topics |
|--|------------------|---|---|
| Lecture Statistics of Financial Markets I (SFM1) | 4 | 6; Attendance (60 h) Self-study (60 h) Exam preparation (60 h) | SFM1: Financial derivative, Option management, Basic concepts of probability theory, Stochastic processes in discrete time, Stochastic Integrals and differential equations, Black-Scholes option pricing model, Binomial model for European options and American options, Exotic options and interest rate derivatives |
| Lecture Statistics of Financial Markets II (SFM2) | 2 | 3; Attendance (30 h) Self-study (30 h) Exam preparation (30 h) | SFM2: Basic concepts of statistical models, ARIMA model, Time series of stochastic Volatility, Nonparametric model on financial time series, Value at risk and back testing, Copulas, Extreme value, Neuronal network |
| Lecture Selected topics of mathematica I statistics (SMS) | 2 | 3; Attendance (30 h) Self-study (30 h) Exam preparation (30 h) | Limiting behavior of different sample statistics U-statistics, M-, L- and R- Estimates. This course gives better understanding for the basic tools learned in the elementary Statistics I and II, like Law of Large Numbers, Central Limit Theorem, Kolmogorov-Smirnov and Cramer-von-Mises tests, sample mean and sample variance behavior, etc. |
| Lecture Advanced Methods in Quantitative Finance (AMF) | 2 | 3; Attendance (30 h) Self-study (30 h) Exam preparation (30 h) | Energy options and knowledge of econometric tools and stochastic finance, robust techniques for financial time series |

| Lecture Statistical Tools for Finance and Insurande (STF) | 2 | 3 Attendance (30 h) Self-study (30 h) Exam preparation (30 h) | Modern statistical tools applied in finance and insurance | |
|--|---|--|---|--|
| Seminar Mathematica I Statistics (MSS) | 2 | 3; Attendance (30 h) Self-study (30 h) Exam preparation (30 h) | Presentation of research results in topics in mathematical statistics | |
| Seminar Economic Risk (QFS) | 2 | 3; Attendance (30 h) Self-study (30 h) Exam preparation (30 h) | Selected Topics of Economic Risk | |
| Module examinations | | SFM1: oral exam (30 min) or written exam (90 min) or working paper and eventually presentation or homework SFM2: oral exam (30 min) or written exam (90 min) or working paper and eventually presentation or homework SMS: oral exam (30 min) or written exam (90 min) or working paper and eventually presentation or homework STF: oral exam (30 min) or written exam (90 min) or working paper and eventually presentation or homework AMF: oral exam (30 min) or written exam (90 min) or working paper and eventually presentation or homework AMF: oral exam (30 min) or written exam (90 min) or working paper and eventually presentation or homework MSS: presentation (30 min) or working paper QFS: presentation (30 min) or working paper | | |
| Duration of the module | | X 1 Semester □ 2 Semesters | | |
| Module can be started in | | Image: Semester or Semester or | | |

| Elective Module QM: | Privatissimum Statistik |
|---------------------|-------------------------|
| Responsible: Härdle | |

The seminar "Privatissimum" is designed to help students in the preparation and completion of their Masters thesis. The thesis must be dedicated to a chosen statistical subject. At the seminar any technical problems or drawbacks are presented and the relevant statistical procedures and results collectively discussed.

Prerequisites to participate in the module: Knowledge of basis statistical concepts and an understanding of a broad spectrum of statistical methods for data analysis.

| Course | Periods/ Week | SP; work load | | Topics |
|---|------------------|--|-------------------|--------------------|
| Seminar Privatissi- mum Statistik (PRI) | 2 | 30; Attendance (30 h) Preparation of presentation (60 h) Master thesis (450 h) | | PRI: Master Thesis |
| Module examinations | | Master thesis (75%) and presentation (25% of final mark) | | |
| Duration of the module | | 🛛 1 Semester | ester 2 Semesters | |
| Module can be started in | | ⊠ Fall Semester <u>or</u> | Spring Seme | ster |

| Elective Module QM: Econometric Methods | Study Points: 9 |
|---|-----------------|
| Responsible: Hautsch | |
| | |

To gain a deep understanding of advanced econometric methods

<u>The lecture aims at providing students with methods to perform own econometric analysis.</u> Topics like the generalized linear regression model, dummy variables, the consideration of stochastic regressors, nonlinear regression models, SUR models and the specification and estimation (2SLS, 3SLS) of simultaneous equation models are covered. Furthermore, asymptotic and test theory is treated.

In <u>the tutorials</u> theoretical exercise questions and empirical applications of the advanced methods will be discussed.

| Prerequisites t | o participate | e in the module: Mo | dule "Introductior | n to Econometrics" (or equivalent) |
|-----------------|--|---|--------------------|--|
| Course | Periods/ Week | SP; work load | | Topics |
| Lecture | 4 | 6; Visiting the lecture (60 h), Preparation for courses (60 h), Exam preparations (60 h) | | Generalized linear model, stochastic regressors, nonlinear regression models, Specification, and simultaneous equation models |
| Tutorials | 2 | 3; Attendance of sessions (30 h), Preparation for and review of tutorial sessions (60 h) | | Theoretical exercise questions, empirical examples. |
| Module exami | le examinations Written exam (180 minutes) | | | |
| Duration of the | e module | ☐ 1 Semester ☐ 2 Semesters | | |
| Module can be | started in | Fall Spring Semester Semester | | ster |

| Elective Module QM: Time Series Analysis | Study Points: 6-9 |
|--|-------------------|
| Responsible: Hautsch | |

To gain an understanding of econometric time-series methodology

The lecture gives an introduction to time series analysis. The focus is on univariate modelling tools. We cover different types of stochastic processes like ARIMA and GARCH models, deal with the unit- root methodology and forecasting procedures. Multivariate extensions are demonstrated, with emphasis on vector autoregressive (VAR) processes and its application in causality and impulse response analyses. Non-stationary systems with integrated and co-integrated variables will also be treated. In the tutorials the time series methods are applied to empirical data. We will intensively make use of

econometric software packages.

Seminar Economic Risk: Presentation of research results in the field of Quantitative Finance

Prerequisites to participate in the module: Module "Introduction to Econometrics" (or equivalent)

| Course | Periods/ Week | SP; work load | Topics |
|--|------------------|--|--|
| Lecture | 3 | 4,5; Attendance (45 h) Preparation for courses (45 h) Exam preparation (30 h) | Stochastic processes, ARIMA and GARCH models, unit-root methodology, forecasting, VAR processes, Cointegration, Causality and impulse-response analysis |
| Tutorial | 1 | 1,5; Attendance (15 h) Preparation (15 h) Assignments (30 h) | Use of econometrics software and application of time series methods |
| Seminar Economic Risk | 2 | 3; Attendance (30 h) Self-study (30 h) Exam preparation (30 h) | Selected Topics of Economic Risk |
| Module examinations Written exam (90 min), (75%), Assignments (25%) Seminar Economic Risk: presentation (30 min) or working | | - | |
| Duration of the module 🛛 1 Semester 🗌 2 Semesters | | I Semester 2 Semesters | |
| Module can be started in Spring Semester | | | ster |

To understand and to learn how to apply advanced methods in certain special fields of econometrics. The lecture(s) and/or seminar deal with specific topics in Econometrics. Topics may cover nonlinear and nonparametric time series analysis, econometric forecasting, resampling methods or Bayesian econometrics. The students will learn, for example also in tutorials, how to apply the advanced methods to empirical data. To this end we will rely on the use of econometric software. To complete the module students may choose courses of 6 SP.

Prerequisites to participate in the module: Module "Econometric Methods" Course Periods/ SP; work load Topics Week Seminar/ 4 6; Presentation of advanced methods in special Lecture/ Attendance (60 h) fields of econometrics; Use of econometric software and application Tutorial Preparation for courses (60 h) Exam preparation (60 h) of econometric methods Module examinations Seminar: Seminar paper and/or oral presentation Lecture: Written exam (90 min if 4 periods/week or 60 min if 2 periods/week) or oral exam Duration of the module ⊠1Semester <u>or</u> 2 Semesters 🛛 Fall Module can be started in Spring Semester Semester <u>or</u>

| Elective Module QM: Econometric Projects |
|--|
| Responsible: Hautsch |

To learn how to apply econometric methods for empirical analysis. During the seminar the students will conduct an own empirical study. The students learn how to apply different econometric methods to real data. This includes empirical data-handling and the ability to translate an economic model framework into an econometric model that can be estimated. Furthermore, the students learn how to present their study in written and oral form.

Prerequisites to participate in the module: Module "Econometric Methods" and one other complementary or compulsory course in econometrics

| Course | Periods/ Week | SP; work load | | Topics |
|-----------------|------------------|--|-------------|--------------------------------|
| Seminar | 2 | 6; Attendance (30 h) Seminar paper (90 h) Presentation (45 h) Assignments (15 h) | | Conduct own empirical analysis |
| Module examir | nations | Seminar paper and oral presentatio | | n |
| Duration of the | e module | ☐ 1 Semester ☐ 2 Semesters | | |
| Module can be | started in | ⊠ Fall Semester <u>or</u> | Spring Seme | ster |

The course aims at providing the basic concepts and methods for analyzing panel data. The lecture introduces different error component regression models with fixed and random effects. It covers tests of hypotheses with panel data as well as techniques for serial correlation, heteroscedasticity, simultaneous equations, dynamic models and models for qualitative dependent variables. In the tutorials the methods are revisited and applied to empirical data.

Prerequisites to participate in the module: Module "Econometric Methods"

| Course | Periods/ Week | SP; work load | Topics | |
|-----------------|------------------|--|---|--|
| Lecture | 3 | 4,5; Attendance (45 h) Preparation (45 h) Exam preparation (45 h) | Basic concepts, error component regression models with fixed and random effects, tests of hypotheses with panel data, serial correlation and heteroscedasticity, simultaneous equations, dynamic models, models for qualitative dependent variables. | |
| Tutorial | 1 | 1,5; Attendance (15 h) Preparation (15 h) Exam preparation (15 h) | Theoretical exercise questions, application of methods to empirical data. | |
| Module exami | nations | Written exam (90 min) | | |
| Duration of the | e module | I Semester I 2 Semesters | | |
| Module can be | started in | Fall Spring Semester Semester | | |

Elective Module QM: Multiple Time Series Analysis

Study Points: 6

Responsible: Hautsch

Goals:

To gain a deep understanding of advanced multiple time series methods and their applications. The lecture gives an introduction to multiple time series techniques and will cover vector autoregressive (VAR) processes, VAR estimation, VAR order selection and model checking. Non-stationary systems with integrated and co-integrated variables will also be treated. The use of VAR models in forecasting, causality and impulse response analysis will be explained and illustrated using empirical examples.

Prerequisites to participate in the module: Module "Econometric Methods"

| Course | Periods/ Week | SP; work load | | Topics |
|-----------------|------------------|--|-------------|---|
| Lecture | 4 | 6; Attendance (60 h) Preparation (30 h) Exam preparation (45 h) Assignments (45 h) | | Vector autoregressive (VAR) processes, co integrated VAR models, forecasting, causality and impulse-response analysis |
| Module examir | nations | ns Written exam (90 min) | | |
| Duration of the | e module | ☐ 1 Semester ☐ 2 Semesters | | |
| Module can be | started in | ⊠ Fall Semester <u>or</u> | Spring Seme | ster |

| Elective Module QM: Microeconometrics | Study Points: 6 |
|---------------------------------------|-----------------|
| Responsible: Hautsch | |

To gain a deep understanding of models and methods for qualitative and limited dependent variables and their applications.

The lecture gives an introduction to models for qualitative and limited dependent variables and will cover logit and probit models for binary dependent variables, multinomial logit and probit models for unordered and ordered categories. In addition, models for censored and truncated data and models with sample selection problems as well as models for duration and count data will be discussed. The use of these models will be explained and illustrated using empirical examples.

Prerequisites to participate in the module :: Module "Introduction to Econometrics" (or equivalent)

| Course | Periods/ Week | SP; work load | | Topics |
|---|------------------|--|--|--|
| Lecture | 3 | 4,5; Attendance (45 h) Preparation (45 h) Exam preparation (45 h) | | Models for limited dependent variables including logit and probit models, models for censored and truncated data, sample selection problems and models for duration and count data |
| Tutorial | 1 | 1,5; Attendance (15 h) Preparation (30 h) | | Solving problems and computer tutorials |
| Module examinations Written exam (90 min) | | min) | | |
| Duration of the | e module | I Semester 2 Semesters | | |
| Module can be | e started in | ☐ Fall ☐ Spring Semester Semester <u>or</u> | | ster |

To gain an understanding of econometrics methods for the analysis of financial market data The lecture deals with the statistical properties of financial market data and econometric methods that can be used to analyze these data. We will study procedures to test for the efficient market hypothesis and become familiar with methods to model the mean and the volatility of financial data series. Besides the application of nonparametric and classical test procedures, the focus will be on time series methods and models. In particular, ARMA and GARCH models will be covered. Empirical illustrations and exercises are incorporated into the lecture.

Seminar Economic Risk: Presentation of research results in the field of Quantitative Finance

Prerequisites to participate in the module: Module "Econometric Methods"

| Course | Periods/ Week | SP; work load | | Topics |
|---|------------------|--|-----------------|--|
| Lecture | 4 | 6; Visiting the lecture (60 h), Preparation for courses (45 h), Exam preparations (45 h) Assignments (30 h) | | Basic concepts and properties of financial returns, Foundations in time series analysis, Modelling time - varying volatility, Estimating and testing asset pricing models, Modelling high-frequency financial data |
| Seminar Economic Risk (QFS) (German) | 2 | 3; Attendance(30 h) Preparation (30 h) Exam preparation (30 h) | | Presentation of research results in Economic Risk |
| Module examii | nations | Written exam (90 minutes) Seminar Economic Risk: Presentation (30 min) or working paper | | on (30 min) or working paper |
| Duration of the | e module | ☐ 1 Semester ☐ 2 Semesters | | |
| Module can be | started in | ⊠ Fall Semester <u>or</u> | Spring Semester | |

| Elective Module QM: Advanced Econometrics |
|---|
| Responsible: Hautsch |

Study Points: 6

Goals:

This course deals with advanced estimation techniques in modern econometrics. Main topics include generalized methods of moments (GMM) estimation for single-equation models and multiple-equation models, information theoretic approaches, pseudo-maximum likelihood methods as well as empirical likelihood techniques. Furthermore, an introduction to Bayesian econometric methods will be given. Here the focus is on fundamental principles of Bayesian inference, Markov chain Monte-Carlo (MCMC) methods as well as different applications of Bayesian inference. Finally, non- and semiparametric methods in econometrics are covered. We will study basic Kernel density estimation, nonparametric regression techniques and estimation of partially linear and additive models. A deep knowledge of the techniques conveyed in this course is extremely useful since they are applied in various areas in modern econometrics, including time series econometrics, micro econometrics, panel econometrics as well as financial econometrics.

| Prerequisites to participate in the module: Module "Econometric Methods" | | | | |
|--|------------------|---|-----------------|--|
| Course | Periods/ Week | SP; work load | | Topics |
| Lecture | 4 | 6 ; Attendance (60 h) Preparation (60 h) Exam preparation (60 h) | | GMM estimation, multiple-equation models, pseudo-maximum likelihood and empirical likelihood methods, Bayesian inference, MCMC techniques, nonparametric regression, partially linear and additive models |
| Module examinations | | Written exam (90 min) | | |
| Duration of the module | | 🛛 1 Semester | 2 Semesters | |
| Module can be started in | | ⊠ Fall Semester <u>or</u> | Spring Semester | |

| Elective Module: Variable Module for completing courses inside the economic department | Study Points: 3-12 |
|--|--------------------|
| Responsible: Examinations Commission | |

Acquirement of knowledge in the fields of business administration and/or economics and/or quantitative methods.

Students may fill the difference between the points acquired in the mandatory, mandatory elective and elective modules and the total amount of 120 SP with this module. The maximum admissible amount is 12 SP.

The approvable courses for this module are courses within the Economics Department which are not part of a mandatory module and are rewarded with less than 6 SP.

| Prerequisites to participate in the module: none | | | | |
|--|------------------|--|-------------|--|
| Course | Periods/ Week | SP; work load Topics | | |
| Lecture or Tutorial or Seminar | 2-8 | 1 Period/Week generally relates to 1,5 SP or 1,5 ECTS. The work load is partitioned, 1 SP matches 30h.Various (Courses at large, from other courses of studies as well) | | |
| Module examinations | | Written exam, seminar paper and presentation, oral exam The required examinations will be announced at the beginning of the semester. | | |
| Duration of the module | | □ 1 Semester □ 2 Semesters | 2 Semesters | |
| Module can be started in | | ☑ Fall Spring Semester Semester <u>or</u> | | |

| Wahlmodul: Variables Modul zur Ergänzung des Wahlbereiches | Stud |
|--|------|
| Verantwortlich: Prüfungsausschuss | |

Erwerb von Kenntnissen in Betriebs- und/oder Volkswirtschaftslehre und/oder in quantitativen Methoden.

Durch dieses Modul können Studienpunkte im Umfang der Differenz der in Pflicht-, Wahlpflicht-, bzw. Wahlmodulen erworbenen Studienpunkte zu dem Gesamtumfang von 120 Studienpunkten erworben werden. In diesem Modul sind maximal 12 SP zulässig.

In diesem Modul sind ausschließlich Lehrveranstaltungen der Wirtschaftswissenschaftlichen Fakultät enthalten, für die weniger als 6 SP vergeben werden und die nicht Bestandteil eines Pflichtmoduls sind.

| Voraussetzungen für die Teilnahme am Modul: keine | | | | |
|---|-----------------|---|------|--|
| Lehr- und Lernformen | Präsenz- SWS | Anzahl der SP/ Arbeitsleistungen | | Lernziele, Themen, Inhalte |
| Vorlesung oder Übung oder Seminar | 2-8 | 1 SWS entspricht in der Regel 1,5 SP sowie 1,5 ECTS. Die Arbeitsleistung ist differenziert und wird mit 30 h je SP angesetzt. | | Differenziert (Lehrveranstaltungen, auch fachfremder Studiengänge) |
| Modulprüfungen | | Klausur, Seminararbeit und Präsentation, mündliche Prüfung Die relevanten Prüfungsleistungen werden spätestens zu Semesterbeginn bekannt gegeben. | | |
| Dauer des Moduls | | ☐ 1 Semester ☐ 2 Semester | | |
| Beginn des Moduls | | ⊠ WS <u>und/oder</u> | 🛛 SS | |

| Elective Module for courses outside of the economic department which students may select on their own initiative | | | Study Points: 3 - 15 | | |
|--|--|---|--|--|--|
| Responsible: Examinations Commission | | | | | |
| Goals: | | | | | |
| the Econ either su | omic Department. | the study regulations students may take courses, up to The goal of this is to enable students to acquire furthe are foreign to the field of economics, or are interdiscipli rientation. | r qualifications which are | | |
| The prer departm | | dance and participation are to be found in the regulation | ns of the respective | | |
| | • | ninations, tests and study points, the examinations con histration will decide on the basis of the following criter | | | |
| 1. | the course of aca be taken, in as m academic achieve courses taken at | is, tests and study points can be taken into consideration idemic studies. Both completed modules or individual conduct nuch as the regulations of the respective course of stud ements, examinations and study points for language co the Career Centre, as well as study points for courses of programme cannot be taken into account. | ourses from modules may ies allow this. In particular, urses, sports courses and | | |
| 2. | Only those study points from courses which were successfully completed with coursework or an examination can be taken into consideration. Those courses for which the student received study points only on the basis of attendance cannot be taken into consideration. | | | | |
| 3. | Only examinations, tests and study points, can be taken into consideration, which are documented by a Transcript of Records or by a certificate of achievement. The certificate verifying this must contain the following information: | | | | |
| | Title and form of the course or courses Level of these courses (Master, diploma - main studies, Ph.D. program) Form of the coursework done in the course and/or of the examinations grade SP or ECTS-points (if in the regulations or stipulations of the respective course of studies nothing is said regarding SP or ECTS-points, then alternately proof of the semester week hours will suffice). | | | | |
| Those study points which were acquired in one and the same course, cannot be divided among different modules. | | | | | |
| 5. Examinations, tests and study points which were acquired outside of the Humboldt University, will be accredited according to the stipulations of the ASSP. In addition, numbers 1 – 4 (see above) still apply. Those examinations, tests and study points which were acquired in courses, the basic and essential content of which were already successfully completed in courses taken at the Economics Department cannot be taken into consideration. | | | | | |
| Module Examinations | | The examination regulations of the other departments apply in regard to the examinations. | | | |

| Außerhalb der Wirtschaftswissenschaftlichen Fakultät frei wählbare | |
|--|--|
| Lehrveranstaltungen | |

Lern- und Qualifikationsziele:

Gemäß § 5 Abs. 4 Studienordnung können im Umfang bis zu 15 SP auch außerhalb der Wirtschaftswissenschaftlichen Fakultät Lehrveranstaltungen frei gewählt werden. Ziel ist es, fachspezifische, fachfremde oder fächerübergreifende Qualifikationen im Hinblick auf die weitere berufliche Orientierung zu erwerben.

Voraussetzungen für die Teilnahme: gemäß Bestimmungen der jeweiligen Fächer

Über die Berücksichtigung der Studienleistungen, Prüfungen und SP entscheidet der Prüfungsausschuss Betriebswirtschaftslehre nach folgenden Maßgaben:

- Berücksichtigt werden Studienleistungen, Prüfungen und SP, die in Studiengängen erworben wurden. Es können ganze Module oder einzelne Lehrveranstaltungen aus Modulen belegt werden, sofern die Bestimmungen des jeweiligen Studienganges dies zulassen. Nicht berücksichtigungsfähig sind insbesondere Studienleistungen, Prüfungen und SP aus Sprachkursen, Sportkursen und Kursen des Career Centers sowie aus Kursen, die nicht in Studiengängen erworben wurden.
- 2. Berücksichtigt werden nur SP aus Lehrveranstaltungen, die mit einer Arbeitsleistung oder Prüfung abgeschlossen wurden. Nicht berücksichtigt werden SP, die ausschließlich für die Anwesenheit in Lehrveranstaltungen erworben wurden.
- 3. Berücksichtigt werden nur Studienleistungen, Prüfungen und SP, die in einem Transcript of Records bzw. Leistungsnachweis dokumentiert wurden. Der Nachweis muss folgende Angaben enthalten:
 - Titel und Art der Lehrveranstaltung(en)
 - Studienniveau (Master, Diplom Hauptstudium, Doktorandenprogramme)
 - Form der Arbeits- und/oder Prüfungsleistung(en)
 - Note
 - SP bzw. ECTS-Punkte (falls in den Bestimmungen des jeweiligen Studienganges keine SP oder ECTS-Punkte ausgewiesen sind, alternativ Nachweis der Semesterwochenstunden).
- 6. Bei der Berücksichtigung sind SP, die in ein und derselben Lehrveranstaltung erworben wurden, nicht auf mehrere Module aufteilbar.
- 7. Studienleistungen, Prüfungen und SP, die außerhalb der Humboldt-Universität zu Berlin erworben wurden, werden nach Maßgabe der ASSP anerkannt. Ergänzend gelten die Ziffern 1 bis 4. Nicht berücksichtigt werden Studienleistungen, Prüfungsleistungen und SP aus Lehrveranstaltungen, deren Inhalte im Wesentlichen bereits erfolgreich an der Wirtschaftswissenschaftlichen Fakultät absolviert wurden.

| Modulprüfungen | Für die Prüfungen gelten die Prüfungsbestimmungen der anderen Fächer. | |
|----------------|---|--|
| | | |