



Master of Science Economics

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Disclaimer:

- The indications about the frequency at which the courses are taught are subject to change. Changes and modifications are possible.
- This version of the Module Handbook has not been approved by any official organ of the faculty. It is a preliminary version. Changes and modifications are possible.

Explanation for the Study Plan:

Contact hours (SWS): *Semesterwochenstunden* (weekly hours per semester).

ECTS: Credit points according to the European Credit Transfer System

Mind: *Mindestens* (minimum requirement)

SS: Summer term (April 1 – September 30)

WS: Winter term (October 1 – March 31)

1. The program of studies

The Master's Program in Economics offers a broad and consecutive degree at an advanced level with a focus on economic issues and methods. During the program, students will develop distinct analytical skills and gain knowledge about current economic topics. They will be able to identify, structure, and analyze problems from different economic, political, and social perspectives, as well as find and present solutions to these problems. Students will gain professional skills and thus will be able to successfully work in the fields of business, finance, policy-making, and economic research.

1.1. Outline

Degree:	Master of Science
Study form:	Consecutive study with a second occupational qualified final degree
Begin of studies:	Winter semester (1. term); Winter- and summer semester (in terms)
Standard period of Study:	4 Semesters
Degree requirements:	120 ECTS-Points
Specializations:	Economics and Politics Finance Digital Markets
Study Abroad:	Recommended in the third and/or fourth semester. Both the faculty and the university offer extensive exchange programs. Alternatively, studying abroad can also be organized by yourself. Advice regarding study abroad from the foreign office of economics can be found in Chapter 5.
Language:	English

1.2. Types of courses

There are three different types of courses, **lectures**, **seminars** and **topics courses**.

Lectures take place weekly and are usually worth 4 ECTS-points. Sometimes lectures are accompanied by an additional weekly tutorial, in which the concepts of the lecture are elaborated in a more practical way. Lectures accompanied by a tutorial usually provide 6 ECTS points.

Seminars are usually worth 4 or 6 ECTS-points and require students to conduct research-related tasks such as reviewing the literature, conducting research projects, writing research papers and giving scientific presentations.

Topics courses provide students with an in-depth research experience and are necessary for obtaining the master degree with honors.

1.3. General program structure

The Master of Science in Economics is a two-year program with a total of 120 ECTS-Points. The degree program is divided into **Mandatory Classes**, **Electives** and the **Master's Thesis**.

Mandatory Classes

There are three blocks of mandatory classes:

- Economic Theory and Policy (30 ECTS)
- Quantitative Economics (16 ECTS)
- Specialization Classes (6 ECTS)

The **Economic Theory and Policy** block consists of five modules:

- Advanced Microeconomics I (6 ECTS)
- Advanced Microeconomics II (6 ECTS)
- Advanced Macroeconomics I (6 ECTS)
- Advanced Macroeconomics II (6 ECTS)
- Economic Policy and Public Choice (6 ECTS)

All five modules are considered mandatory for all students, but upon request one of the modules from this block can be replaced with an internal elective worth 6 ECTS-points.

The **Quantitative Economics** block consists of two mandatory modules:

- Intermediate Econometrics (10 ECTS)
- Computational Economics (6 ECTS)

The **Specialization Classes** are one or two modules with a total of 6 ECTS-points, which are dependent on the specialization profile of the students:

- **Economic & Politics:** Constitutional Economics (6 ECTS)
- **Finance:** Principles of Finance (6 ECTS)
- **Digital Markets:** Digital and Network Economics (3 out of 6 ECTS) and Electronic Markets (3 out of 6 ECTS)

Electives

A total of **44 ECTS-points** must be completed with modules chosen by the student from the different electives offered by the department of Economics. Most elective modules provide 4 or 6 ECTS points. The elective area is comprised of two types of courses. There are two types of elective courses:

- Internal Elective Courses
- External Elective Courses

Internal Elective Courses are chosen by the student and are related to their field of specialization. A minimum of 32 ECTS points and a maximum of 44 ECTS points must be acquired from internal elective courses.

External Elective Courses are chosen by the student and are not related to their field of specialization. A maximum of 12 ECTS points can be chosen from those modules.

In order to graduate, students are required to complete at least **one Seminar**, which can be either an internal or external elective.

Master's Thesis

The Master's thesis is an academic project written during the final phase of the Master's program and is awarded **24 ECTS-points**. The thesis has to be completed within 20 weeks and should have 35 pages at maximum. To be eligible for the Master's thesis, students must have attained at least 70 ECTS-points in total and at least 24 ECTS-points from the "Economic Theory and Policy" block.

1.4. Recommended Study Plan for Master of Science Economics (MEP)

Recommended plan of studies for the Master of Science in Economics						
Sem.	Economic Theory and Policy	Quantitative Economics	Profile 1 Economics & Politics	Profile 2 Finance	Profile 3 Digital Markets	ECTS-Points
1 (WS)	Advanced Microeconomics I 6 ECTS Advanced Macroeconomics I 6 ECTS Economic Policy and Public Choice 6 ECTS	Intermediate Econometrics 10 ECTS				28
2 (SS)	Advanced Microeconomics II 6 ECTS Advanced Macroeconomics II 6 ECTS	Computational Economics 6 ECTS	Constitutional Economics 6 ECTS	Principles of Finance 6 ECTS	Electronic Markets 3-6 ECTS	ca. 30
			Elective Courses Economics & Politics 44 ECTS	Elective Courses Finance 44 ECTS	Digital and Network Economics 3-6 ECTS	
3 (WS)					Elective Courses Digital Markets 38-44 ECTS	ca. 32
4 (SS)	Master Thesis (20 Weeks) 24 ECTS					ca. 30
	30 ECTS	16 ECTS	74 ECTS	74 ECTS	74 ECTS	120 ECTS

Please notice

The course schedule is a general recommendation for the organization of successful and continuous studies. Individual preferences and changes are possible. The study regulations are to be complied with. Additionally, the following points must be considered:

- a. Modules can be consecutive with regards to content, e.g. lectures are often succeeded by seminars in the next semester. Please compare with the individual module descriptions.
- b. After **2 semesters**, at least **18 ECTS points** have to be acquired in order to ensure successful progression of the studies. If the student is not able to fulfill the requirements, he or she will lose the right to take the exams. This is not the case if the student is not responsible for exceeding the deadline.
- c. Mandatory courses are offered regularly and usually once a year. Some elective courses are also offered regularly (every Winter Semester or every Summer Semester). Several elective courses are offered irregularly, although courses of similar content are offered regularly. Please check "Frequency taught" in each module description. Please note that the indications about the frequency at which the courses are taught are subject to change and modifications are possible.

For these reasons (a – c above), a carefully thought out and individual schedule for your studies is highly recommended

1.5. Job perspectives

The aim of this program is to qualify students for positions in national and international organizations and institutes. The program is designed specifically to provide graduates with professional competence and knowledge of empiric methods.

The **Economics & Politics** profile, with its emphasis on economic policy analytics and quantitative methods, qualifies graduates for employment at regulatory or policy-making organizations, governmental and international institutions such as central banks, federal ministries, the European Commission, international development agencies, economic policy consultancies, and research institutes devoted to economic policy analysis.

The **Finance** profile, with its strong focus on quantitative finance, prepares students for careers in the financial sector, particularly in the areas of risk analysis, portfolio management and analysis, and development of derivatives, futures and options.

The **Digital Markets** profile, formerly **Information Systems and Network Economics**, has an emphasis on quantitative skills that allow our students to succeed in careers such as data science, data analytics, data mining and business analytics.

In addition, the degree provides an entry point for an academic career, doctoral studies, and positions at research institutes.

2. Organization of the studies

During the program, students have to comply with various formalities regarding registration and proof of successful exam results. The examination office of the Faculty of Economics is responsible for the administration of these formalities.

2.1. Registration

There is a general distinction between the registration to attend classes and the registration to take course related exams. A registration for a class does not automatically lead to a registration for the corresponding exam and vice versa.

Attending courses:

In order to attend lectures, students are required to register for that class via the online campus management system (HISinONE). Some lectures might restrict participation to smaller groups, such as block lectures or those requiring PC-Pool sessions or tutorials. To take part in a course with limited spaces available, students may be required by the respective chair to apply for a spot in the lecture. Registration usually takes place before the beginning of the semester, but it is also possible to register for classes during the semester.

Seminars and topic courses are restricted to small groups and usually require a direct application to the chair before the beginning of the semester. Details of the application process are posted on the website of the respective department.

Registration for exams:

It is necessary to register via the online campus management system (HISinONE) for the examinations of lectures. Students have to register for exams independently from the lectures. A registration for a lecture does not automatically register that student for the exam. You can find all necessary information regarding deadlines and procedures on the Economic Faculty examination office's homepage or at the website of the Master of Economics Program.

2.2. Performance Records

You can only receive the ECTS points for a given module once you have successfully taken all the required course-related examinations or fulfilled all the required achievements of that course.

Program achievements (Studienleistungen):

Program achievements are individually written, oral or practical tasks that students fulfill during the semester in the connection with their courses. These tasks can be written assignments or journals. Students will be informed about the amount and type of program achievements at the beginning of each module. Program achievements are evaluated, but not graded. However, there are minimum requirements that have to be fulfilled. The evaluation of these achievements is usually not part of the final grade.

Examination Achievements (Prüfungsleistungen):

Module exams are usually course-related. Students will be informed about the amount and type of course-related exams in their module handbook and at the beginning of each module. Oral exams are usually but not exclusively in the form of seminar presentations. Typical types of written exams are tests, assignments or term papers.

The duration of a written test is usually calculated as 15 minutes per ECTS-point earned, meaning that a class worth 4 ECTS-points will have a 60-minute exam and a class worth 6 ECTS-points will have a 90-minute exam. The result is part of the final grade. The degree final grade is the average of ECTS points earned, consisting of module grades and Master's thesis.

Timely registration is necessary in order to take the exam. If students take a module of choice from a different faculty, these faculty's course-related exam regulations apply.

Degree with Honors

If the final average grade of the master degree is at least 2,0 and a "good" grade (2,5 or better) is achieved in at least two topics courses, the predicate "with honors" is awarded.

2.3. Preliminary Exam

The program's preliminary exam is passed when at least **18 ECTS-points** have been acquired after the first two semesters. This ensures successful progress of the studies. If the student is unable to fulfill the requirement, he or she will lose the right to take the exams. This is not the case if the student is not responsible for exceeding the deadline.

3. Overview of the Modules

Disclaimer:

- The indications about the frequency at which the courses are taught are subject to change. Changes and modifications are possible.

Tip:

With a click on the title of the module you will be linked to the detailed description of the module. A click on the section "Area of study/ Profiles" of the module description leads you back to the course overview.

1st year: Mandatory courses:

Economic Theory and Policy		
	ECTS	Page
4 out of 5 Modules (One can be replaced with an elective course)		
Advanced Microeconomics I	6	18
Advanced Microeconomics II	6	20
Advanced Macroeconomics I	6	22
Advanced Macroeconomics II	6	23
Economic Policy and Public Choice	6	24
Quantitative Economics		
Intermediate Econometrics	10	26
Computational Economics: Non-linear Optimization	6	28
Specialization Courses		
Constitutional Economics (Economics & Politics)	6	29
Principles of Finance (Finance)	6	31
32Electronic Markets (Digital Markets)	3 out 6	32
Digital and Network Economics (Digital Markets)	3 out 6	34

2nd year: Elective courses:

Internal electives		
	ECTS	Page
Internal elective modules are those elective modules belonging to the student's own specialization profile.		
A minimum of 32 ECTS and a maximum of 44 ECTS in internal elective modules must be attained.		

External electives		
	ECTS	Page
External elective modules are elective modules from other specialization profiles.		
A maximum of 12 ECTS in external elective modules can be attained.		

Profile 1: Economics and Politics		
	ECTS	Page
Mandatory Course:		
Constitutional Economics	6	29
Elective Courses in free choice of 44 ECTS		
Advanced Methods in Dynamic Macroeconomics	6	36
Fehler! Verweisquelle konnte nicht gefunden werden.	6	Fehler! Text mark e nicht defin iert.
Fehler! Verweisquelle konnte nicht gefunden werden.	4	Fehler! Text mark e nicht defin iert.
Business Analytics and Machine Learning	6	41
Causal Analysis in Labor Economics using R	4	42
Digital and Network Economics	6	45
Economics of Social Justice	4 or 6	47
Electronic Markets	6	49
Industrial Organization	6	55
Introduction to Empirical Economics using Stata	6	58
Macroeconomic Models of Climate Change	Macr oeco nomi c Mode ls of Clima te Chan ge6	Macr oeco nomi c Mod els of Clim ate Chan ge59
Mathematical Methods for Economics and Finance	6	60
Python Course	6	62
The Economics of Corruption	4 or 6	63
The Economics of Terror	4 or 6	64
The Political Economics of Information and Media	4 or 6	66
Elective Seminars in free choice of 44 ECTS		
Selected Topics in Industrial Organization and Competition Economics	6	71
Selected Topics in Institutional Economics and International Economic Policy (Seminar)	6	72

Selected Topics in International and Development Economics	4 or 6	73
Special Topics in Basic Income Studies	6	77
Topics in Behavioral Economics	6	78
Topics in Macroeconomics I	6	79
Topics in Macroeconomics II	6	80

Profile 2: Finance		
	ECTS	Page
Mandatory Course:		
Principles of Finance	6	31
Elective Courses in free choice of 44 ECTS		
Advanced Methods in Dynamic Macroeconomics	6	36
Fehler! Verweisquelle konnte nicht gefunden werden.	6	Fehler! Textmarke nicht definiert.
Fehler! Verweisquelle konnte nicht gefunden werden.	4	Fehler! Textmarke nicht definiert.
Business Analytics and Machine Learning	6	41
Causal Analysis in Labor Economics using R	4	42
Derivatives Pricing	6	44
Digital and Network Economics	6	45
Electronic Markets	6	49
Empirical Research in Accounting	6	51
Financial Time Series Analysis	6	52
Futures and Options	6	54
Industrial Organization	6	55
Information for Capital Markets	4	56
Macroeconomic Models of Climate Change	Macroeconomic Models of Climate Change 6	Macroeconomic Models of Climate Change 59
Mathematical Methods for Economics and Finance	6	60
Portfolio Management	6	61
Python Course	6	62
Topics in Econometrics and Statistical Learning	6	68
Elective Seminars in free choice of 44 ECTS		

Finance, Climate change, and the Global Energy Transition	6	69
Selected Topics in Industrial Organization and Competition Economics	6	71
Seminar in Empirical Finance	6	74
Social Contract Laboratory – SoCoLab: Basic Income and Social Justice		
Topics in Behavioral Economics	6	78
Topics in Macroeconomics I	6	79
Topics in Macroeconomics II	6	80

Profile 3: Digital Markets		
	ECTS	Page
Specialization Courses:		
Electronic Markets	3 out of 6	32
Digital and Network Economics	3 out of 6	34
Elective Courses in free choice of 44 ECTS		
Advanced Methods in Dynamic Macroeconomics	6	36
Fehler! Verweisquelle konnte nicht gefunden werden.	6	Fehler! Textmarke nicht definiert.
Fehler! Verweisquelle konnte nicht gefunden werden.	4	Fehler! Textmarke nicht definiert.
Business Analytics and Machine Learning	6	41
Causal Analysis in Labor Economics using R	4	42
Financial Time Series Analysis	6	52
Industrial Organization	6	55
Macroeconomic Models of Climate Change	Macroeconomic Models of Climate Change6	Macroeconomic Models of Climate Change 59
Mathematical Methods for Economics and Finance	6	60
Python Course	6	62
The Political Economics of Information and Media	4 or 6	66
Topics in Econometrics and Statistical Learning	6	68
Elective Seminars in free choice of 44 ECTS		
Main Seminar in Information Systems	6	70
Selected Topics in Industrial Organization and Competition Economics	6	71
Seminar in Empirical Finance	6	74
Topics in Behavioral Economics	6	78
Topics in Macroeconomics I	6	79
Topics in Macroeconomics II	6	80

4. Overview of the Modules

4.1. Block: Economic Theory and Policy

Module	Advanced Microeconomics I		
Area of study / Profile	► Mandatory Economic Theory and Policy		
Recommended Semester	1 st semester	Mandatory/Elective	Mandatory
Module Coordinator	Prof. Dr. Germain Gaudin	Workload	180 hours
ECTS (Credit Points)	6 ECTS	Contact Hours (SWS)	2h Lecture 2h Tutorial
Course Type	<ul style="list-style-type: none"> ▪ Lecture ▪ Tutorial 	Language	English
Rotation	Every winter semester		
Requirements	Strong command of intermediate microeconomics. The following text is suitable for preparation: M. J. Osborne and A. Rubinstein: <i>Models in Microeconomic Theory</i> , Open Book Publishers, 2020 (electronic version freely available on the publisher's website).		
Learning/Qualification Target	<ul style="list-style-type: none"> ▪ Provide students with a solid foundation in microeconomic theory, using mathematical techniques. ▪ Provide students with a deeper knowledge in the neo-classical theory of consumers and firms. ▪ Provide students with a deeper knowledge in topics related to general equilibrium, and introduction to decisions under uncertainty. ▪ This course is required for students aiming at deepening their knowledge in Microeconomics, with an aim to pursue a career as economists in firms or organizations, or in a PhD program. 		
Content	<p>This course covers advanced microeconomic models, starting with the notions of preferences. Students will be taught the necessary tools to understand advanced economic models. They will become familiar with advanced notions and models of individual choice, as well as the decision problems of firms. Students will learn both about the partial analysis of isolated markets, and the general equilibrium analysis. Emphasis will be made not only on the mathematical formulation of the problems, but also on the related economic meaning (and intuition).</p> <p>A detailed list of the topics addressed is as follows:</p> <ul style="list-style-type: none"> ▪ Consumer theory: Notions; Preferences and utility; The consumer's problem; Indirect utility and expenditure; Consumer demand ▪ Topics in Consumer theory: e.g. Revealed preferences; Uncertainty ▪ Theory of the firm: Notions; Production; Cost; Duality in production; The competitive firm ▪ Partial equilibrium: Perfect competition; Imperfect competition; Equilibrium and welfare ▪ General equilibrium: Equilibrium in exchange; Equilibrium in competitive markets; Equilibrium in production; Core and equilibria 		
Examination Type	Written examination at the end of the semester		

Literature	<p>Main reference:</p> <ul style="list-style-type: none"> ▪ G. A. Jehle and P. J. Reny, <i>Advanced Microeconomic Theory</i>, FT Press, 3rd ed. 2010. <p>Other references:</p> <ul style="list-style-type: none"> ▪ A. Mas-Colell, M. D. Whinston and J. R. Green, <i>Microeconomic Theory</i>, Oxford University Press, 1995. ▪ A. Rubinstein, A., <i>Lecture Notes in Microeconomic Theory</i>, Princeton University Press, 2016. (Freely available on the author's website). ▪ D. M. Kreps, <i>Microeconomic Foundations I: Choice and Competitive Markets</i>, Princeton University Press, 2012. ▪ H. R. Varian, <i>Microeconomic Analysis</i>, W. W. Norton & Company, 3rd ed. 1992.
Additional Information & Links	<p>https://www.competition.uni-freiburg.de/</p>

Module	Advanced Microeconomics II		
Area of study / Profile	► Mandatory Economic Theory and Policy		
Recommended Semester	2 nd semester	Mandatory/Elective	Mandatory
Module Coordinator	Prof. Dr. Germain Gaudin	Workload	180 hours
ECTS (Credit Points)	6 ECTS	Contact Hours (SWS)	2h Lecture 2h Tutorial
Course Type	<ul style="list-style-type: none"> ▪ Lecture ▪ Tutorial 	Language	English
Rotation	Every summer semester		
Requirements	Strong command of intermediate microeconomics. The following text is suitable for preparation: M. J. Osborne and A. Rubinstein: <i>Models in Microeconomic Theory</i> , Open Book Publishers, 2020 (electronic version freely available on the publisher's website).		
Learning/ Qualification Target	<ul style="list-style-type: none"> ▪ Provide students with a solid foundation in microeconomic theory, using mathematical techniques. ▪ Provide students with a deeper knowledge of game theory and strategic decision-making. ▪ Provide students with a deeper knowledge in information economics and informational issues, as well as topics related to mechanism design and auctions. ▪ This course is required for students aiming at deepening their knowledge in Microeconomics, with an aim to pursue a career as economists in firms or organizations, or in a PhD programm. 		
Content	<p>This course covers advanced microeconomic models, and strategic decision-making and interactions. Students will be taught solid grounds in game theory and in the analysis of non-cooperative games. The course will cover games with complete and incomplete information, as well as games with finite and infinite horizon. Students will be made familiar with various topics in auctions and mechanism design. Emphasis will be made not only on the mathematical formulation of the problems, but also on the related economic meaning (and intuition).</p> <p>A detailed list of the topics addressed is as follows:</p> <ul style="list-style-type: none"> ▪ Game theory: Strategic decision making; Strategic form games; Extensive form games ▪ Information economics: Adverse selection; Moral hazard, principal-agent problem; Information and market performance ▪ Auctions and mechanism design: Four standard auctions; Independent private values model; Revenue equivalence theorem; Designing a revenue maximizing mechanism; Designing allocatively efficient mechanisms 		
Examination Type	Written examination at the end of the semester		
Literature	<p>Main reference:</p> <ul style="list-style-type: none"> ▪ G. A. Jehle and P. J. Reny, <i>Advanced Microeconomic Theory</i>, FT Press, 3rd ed. 2010. <p>Other references:</p>		

	<ul style="list-style-type: none"> ▪ Mas-Colell, M. D. Whinston and J. R. Green, <i>Microeconomic Theory</i>, Oxford University Press, 1995. ▪ H. R. Varian, <i>Microeconomic Analysis</i>, W. W. Norton & Company, 3rd ed. 1992. ▪ M. J. Osborne, <i>An Introduction to Game Theory</i>, Oxford University Press, International ed. 2009. ▪ R. Gibbons, <i>A Primer in Game Theory</i>, Pearson Higher Education, 1992. ▪ Rubinstein, A., <i>Lecture Notes in Microeconomic Theory</i>, Princeton University Press, 2016. (Freely available on the author's website). ▪ D. M. Kreps, <i>Microeconomic Foundations I: Choice and Competitive Markets</i>, Princeton University Press, 2012.
<p>Additional Information & Links</p>	<p>https://www.competition.uni-freiburg.de/</p>

Module		Advanced Macroeconomics I	
Area of study / Profile	► Mandatory Economic Theory and Policy		
Recommended Semester	1 st semester	Mandatory/Elective	Mandatory
Module Coordinator	Prof. Dr. Marten Hillebrand	Workload	180 hours
ECTS (credit points)	6 ECTS	Contact Hours (SWS)	3h Lecture 2h Tutorial
Course type	<ul style="list-style-type: none"> ▪ Lecture ▪ Tutorial 	Language	English
Rotation	Winter term		
Requirements	<p>Course participants are expected to have a sound understanding of intermediate macroeconomics and microeconomics paired with a solid background in basic mathematics (linear algebra, calculus, constrained optimization,...), statistics (random variables, probability, expected values,...) and the theory of dynamical systems (fixed points, dynamic stability,...) in discrete time. Since the course has a strongly quantitative focus, we expect a genuine interest in economic theory and mathematical model building.</p>		
Learning/ Qualification Target	<p>Students are able to analyze and interpret macroeconomic models at an advanced level using state-of the art dynamic (stochastic) general equilibrium theory with a focus on monetary models of the business cycle and the role of fiscal and monetary policy in this framework. Specifically, they learn about how monetary policy interacts with fiscal policy and how both branches jointly determine prices and allocations in real and financial markets and consumer welfare under alternative informational and political constraints.</p>		
Content	<p>Course outline (tentative)</p> <ol style="list-style-type: none"> 1. The Basic New Classical Model 2. Monetary Dynamics and Fiscal-Monetary Interaction 3. Expansionary Fiscal Policy 4. The Stochastic New Classical Model 5. The Basic New Keynesian Model 6. Fiscal and Monetary Policy in the New Keynesian Model* <p>* = 'time permitting'</p>		
Examination Type	Written examination (90 min.)		
Literature	<ul style="list-style-type: none"> ▪ Cochrane (2023): <i>The Fiscal Theory of the Price Level</i>. Princeton University Press. ▪ Gali (2008): <i>Monetary Policy, Inflation, and the Business Cycle</i>. Princeton University Press. ▪ Ljungqvist & Sargent (2012): <i>Recursive Macroeconomic Theory</i>. MIT Press. ▪ Miao (2014): <i>Economic Dynamics in Discrete Time</i>. MIT Press. ▪ Additional selected journal articles. 		
Additional Information & Links	<p>For further information, please see the chair homepage: https://www.macro.uni-freiburg.de/teaching/courses</p>		

Module	Advanced Macroeconomics II		
Area of study / Profile	► Mandatory Economic Theory and Policy		
Recommended Semester	2 nd semester	Mandatory/Elective	Mandatory
Module Coordinator	Prof. Dr. Marten Hillebrand	Workload	Ca. 180 hours
ECTS (credit points)	6 ECTS	Contact Hours (SWS)	3h Lecture 2h Tutorial
Course type	<ul style="list-style-type: none"> ▪ Lecture ▪ Tutorial 	Language	English
Rotation	Summer term		
Requirements	Course participants are expected to have a sound understanding of intermediate macroeconomics and microeconomics paired with a solid background in basic mathematics (linear algebra, calculus, constrained optimization, etc.) and the theory of dynamical systems (fixed points, dynamic stability, etc.) in discrete time. Since the course has a strongly quantitative focus, we expect a genuine interest in economic theory and mathematical model building.		
Learning/Qualification Target	Introduction to advanced theories and models of economic growth with exogenous and endogenous technological progress and their applications to political and environmental problems.		
Content	Part I: Models with Exogenous Growth 1. The Solow Model of Economic Growth 2. The Neoclassical Growth Model 3. Fiscal Policy in the Neoclassical Growth Model 4. Energy and Natural Resources Part II. Endogenous Growth Models 5. The Romer Model 6. Directed Technical Change* 7. The Environment and Directed Technical Change* * = 'time permitting'		
Examination Type	Exam (90 min.)		
Literature	Acemoglu, D. (2009): Modern Economic Growth. Princeton: Princeton University. Additional selected journal articles		
Additional Information & Links	For further information, please see the chair's homepage: https://www.macro.uni-freiburg.de/teaching/courses		

Module		Economic Policy and Public Choice	
Area of study / Profile	► Mandatory Economic Theory and Policy		
Recommended Semester	1 st semester	Mandatory/Elective	Mandatory
Module Coordinator	Prof. Dr. Bernhard Neumärker	Workload	Ca. 180 hours
ECTS (credit points)	6 ECTS	Contact Hours (SWS)	2h Lecture 2h Tutorial
Course type	<ul style="list-style-type: none"> ▪ Lecture ▪ Tutorial 	Language	English
Rotation	Winter term		
Requirements	Basic knowledge of microeconomics is recommended		
Learning/Qualification Target	<p>Students are able to identify and analyze economic policy problems using economic theory. They develop an appreciation for the economic analysis of different systems and levels of collective decision-making.</p> <p>They learn to apply relevant economic models and analytical methods to examine policy processes and assess policy effectiveness.</p> <p>This enables them to gain a sophisticated understanding of how economic policy is formed, to structure and evaluate policy norms, and to derive and design practical policy implications.</p>		
Content	<ul style="list-style-type: none"> ▪ Introduction ▪ Economic problems of economic policy <ol style="list-style-type: none"> 1. Economic man and collective action 2. Allocation and exchange 3. Distribution and conflict 4. Liberty and welfare 5. Implementation and reform 6. Stability and sustainability ▪ The public choice of economic policy <ol style="list-style-type: none"> 1. Rational and behavioral public choice 2. Positive and normative public choice ▪ Institutions and hierarchies of public choice <ol style="list-style-type: none"> 1. Authoritarian policy formation 2. Democratic organization and voting rules 3. Spatial hierarchy ▪ Liberal concepts of economic policy formation <ol style="list-style-type: none"> 1. Ordoliberal design 2. Liberal paternalism 3. Constitutional political economy ▪ Application to special policy issues <ol style="list-style-type: none"> 1. Redistribution in democracy 2. Organizing the just welfare state 3. Market regulation and privatization 4. Constitutional budget constraints and their effects on economic policy 		
Examination Type	Written examination (90 min.)		
Literature	<i>Introductory textbooks:</i>		

	<ul style="list-style-type: none">▪ Hillman, A.L.: Public Finance and Public Policy, 2nd Ed., Cambridge 2009.▪ Mueller, D.C.: Public Choice III, Cambridge 2003.▪ Additional readings are announced in class.
Additional Information & Links	https://gwp.uni-freiburg.de/

4.2. Quantitative Economics

Module	Intermediate Econometrics		
Area of study / Profile	► Mandatory Quantitative Economics		
Recommended Semester	1 st semester	Mandatory/ Elective	Mandatory
Module Coordinator	Prof. Dr. Roxana Halbleib	Workload	Approx. 300 hours
ECTS (credit points)	10 ECTS	Contact Hours (SWS)	4h Lecture 2h Exercise session
Course Type	<ul style="list-style-type: none"> ▪ Lecture ▪ Exercise session ▪ Additional tutorial 	Language	English
Rotation	Every winter term		
Requirements	Knowledge of mathematics, statistics, probability theory, inference and hypotheses testing and bivariate regression analysis (as taught in any standard bachelor program in economics).		
Learning / Qualification Target	This course aims at providing students with the basic tools in undergoing empirical research on their own. Upon successful completion of this course, students should be acquainted with the fundamentals of regression analysis and with its strengths and limitations. Moreover, they should be able to apply econometric tools and software to real economic problems and to thoroughly understand and critically interpret empirical findings.		
Content	<p>The course covers the fundamentals of multiple linear regression analysis applied to cross sectional and time series data with emphasis on both theoretical foundations and empirical applications. The course also covers some selected topics in advanced econometrics.</p> <p>Besides lectures, the course entails exercise sessions, where both theoretical and computer exercises are solved. While the theoretical exercises aim at understanding and deepening the theoretical concepts, the computer exercises aim at providing students with practical skills in undergoing empirical work by using R.</p> <p>The course is divided in two parts:</p> <ul style="list-style-type: none"> • Part I (taught most probably in the first 4 weeks of teaching) is mandatory only for 10 ECTS. • Part II (taught starting most probably with week 5 of teaching) is mandatory for 6 and 10 ECTS. • The 6 ECTS students may also visit Part I of the course in order to refresh their pre-requisite knowledge. • However, it is required that 6 ECTS students visit the first lecture, where organisational issues of the course throughout the semester are presented. <p>Part I including both lectures and exercise sessions consists of a review of the methods taught in the statistics and econometrics courses in the Bachelor of Science in Volkswirtschaftslehre (Economics) including the bivariate regression analysis. Part I is mandatory for the 10 ECTS students, but not for the 6 ECTS students. Part II includes advanced topics, such as: functional forms, heteroskedasticity, instrumental variables, asymptotic theory of OLS and quantal response models.</p>		

	Part II is compulsory for both students writing the exam for 10 ECTS points (Master in Economics) and students writing the 6 ECTS points (Master VWL).
Examination Type	Final exam (120 minutes) In the exam you may use the "Formulas and Tables for Econometrics", which are handed out to you by us at the exam. You may also use a non-programmable calculator and a hardcopy of a German-English dictionary book.
Literature	<p><u>Introductory Literature</u></p> <ul style="list-style-type: none"> ▪ Wooldridge, J. M. (2019): <i>Introductory Econometrics – A Modern Approach</i>, 7th ed., South Western, Cengage Learning. Please note that old book editions are acceptable as well. ▪ Greene, W. H. (2020): <i>Econometric Analysis</i>, 8th ed., Pearson Prentice Hall. Other book editions are acceptable as well. ▪ Pohlmeier, W. (2020): <i>Econometrics I, Lecture Notes</i>, University of Konstanz, unpublished, downloadable from Ilias. <p><u>Additional Literature</u></p> <ul style="list-style-type: none"> ▪ Stock, J. H. and M. W. Watson (2019): <i>Introduction to Econometrics</i>, updated 4th ed., global ed., Pearson. Old book editions are acceptable as well. ▪ Angrist, J. D., and J.-S. Pischke (2009): <i>Mostly Harmless Econometrics – An Empiricist’s Companion</i>, Princeton University Press. ▪ Angrist, J. D. and J. S. Pischke (2014): <i>Mastering Metrics: The Path from Cause to Effect</i>, Princeton University Press. ▪ Heiss, Florian (2016): <i>Using R for Introductory Econometrics</i>. ▪ Kleiber C. and Zeileis A. (2008): <i>Applied Econometrics with R</i>, Springer. ▪ Hansen, Bruce (2022): <i>Econometrics</i>, Princeton University Press. ▪ Hansen, Bruce (2022): <i>Probability and Statistics for Economists</i>, Princeton University Press. ▪ Hanck C., Arnold M., Gerber A. and Schmelzer M. (2020), <i>Introduction to Econometrics with R</i>. <p>Further references will be given throughout the course.</p>
Additional Information & Links	https://uni-freiburg.de/econ-econometrics/teaching/ The course material, updates and all relevant information is available on ILIAS.

Module	Computational Economics: Non-linear Optimization		
Area of study / Profile	► Mandatory Quantitative Economics		
Recommended Semester	1. - 4. semester	Mandatory/Elective	Elective
Module Coordinator	Prof. Dr. Dirk Neumann	Workload	Ca. 180 hours
ECTS (credit points)	6 ECTS	Contact Hours (SWS)	2h Lecture 1h Exercise 1h Tutorial
Course Type	<ul style="list-style-type: none"> ▪ Lecture ▪ Exercise ▪ Tutorial 	Language	English
Rotation	Winter term		
Requirements	None, Computational Economics is designed as an introductory Master-level course		
Learning/Qualification Target	Students develop an understanding of economic models using standard software at a PC. They learn to formulate economic models and to express them mathematically as well as to analyze them using software. Exercise sessions will provide a hands-on experience using standard software packages like Mathematica.		
Content	In Computational Economics well-known economic problems are revisited, formulated as mathematical problems, and implemented using software. The models encompass a wide range of issues from microeconomics and macroeconomics, business production planning, as well as complex models of economic growth. The lecture discusses theoretical basics and methods of model design, as well as algorithms to solve them. During hands-on exercise sessions and tutorials these skills are practiced using software.		
Examination Type	Prüfungsleistung (benotet): Written exam Studienleistung: Achieving 2/3 (i.e., 66%) of the points in the exam.		
Literature	<ul style="list-style-type: none"> ▪ K.L. Judd, 1998, <i>Numerical Methods in Economics</i>, MIT Press: Cambridge, MA. ▪ D.A. Kendrick, P.R. Mercado, & H.M. Amman, 2005, <i>Computational Economics</i>, Princeton University Press: Princeton, NJ. 		
Additional Information & Links	http://www.is.uni-freiburg.de		

4.3. Specialization Courses

Module	Constitutional Economics		
Area of study/Profile	► Specialization Course: Economics and Politics		
Recommended semester	1.-4.	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Dr. Lars P. Feld	Work load	Ca. 180 hours
ECTS (credit points)	6 ECTS	Contact hours (SWS)	2h Lecture 2h Tutorial
Course type	Lecture + Tutorial	Language	English
Rotation	Summer Terms		
Requirements	No special requirements		
Learning/ qualification target	<ul style="list-style-type: none"> • Students should gain an understanding of the importance of the design of market and political institutions for the efficiency of market processes. • The learning objective is the ability to analyze important social and economic problems and develop socially relevant institutional solutions for them. 		
Content	<p>The first part of the event is devoted to the background and theoretical framework, beginning with a discussion of the distinction between constitutional and non-constitutional economics and the Freiburg School as a precursor. This will be followed by an analysis of the economics of constitutional economics itself and the central assumptions of the research program. In addition, constitutions will be examined as social contracts, and constitutional rights and the differentiation between positive and normative constitutional economics will be discussed. The second part focuses on concrete applications such as the influence of electoral rules and forms of government on economic policy, as well as the long-term effects of institutions on economic outcomes.</p>		
Examination type	PL (written Exam) <ul style="list-style-type: none"> • 6 ECTS: 90 min. 		
Literature	<p>Required readings:</p> <ul style="list-style-type: none"> • Buchanan, J. M. (1990). <i>The Domain of Constitutional Economics. Constitutional Political Economy</i> 1(1), 1–18. • Vanberg, V. (1988). “Ordnungstheorie” as Constitutional Economics – The German Conception of a “Social Market Economy”. <i>ORDO</i> 39, 17–31. • Buchanan, J. M. & Tullock, G. (1962/1999). <i>The Calculus of Consent: Logical Foundations of Constitutional Democracy</i>. Indianapolis: Liberty Fund, chapter 6: “A Generalized Economic Theory of Constitutions”. • Buchanan, J. M. (1975/2000). <i>The Limits of Liberty: Between Anarchy and Leviathan</i>. Indianapolis: Liberty Fund, chapter 4: “Constitutional Contract: The Theory of Law”. • Vanberg, V. (2005). Market and State: The Perspective of Constitutional Political Economy. <i>Journal of Institutional Economics</i> 1(1), 23–49. 		

	<ul style="list-style-type: none"> • Mueller, D. C. (1996). <i>Constitutional Democracy</i>. Oxford: Oxford University Press, chapter 5: “The Nature of a Constitution”. • Feld, L. P. & Voigt, S. (2003). Economic Growth and Judicial Independence: Cross-Country Evidence Using a New Set of Indicators. <i>European Journal of Political Economy</i> 19(3), 497–527. • Voigt, S. (2011). Positive Constitutional Economics II – A Survey of Recent Developments. <i>Public Choice</i> 146(1-2), 205–256. • Matsusaka, J. G. (2005). Direct Democracy Works. <i>Journal of Economic Perspectives</i> 19(2), 185–206. • Weingast, Barry R. (1995). The Economic Role of Political Institutions: Market-Preserving Federalism and Economic Development. <i>Journal of Law, Economics, & Organization</i> 11(1), 1–31. • Kantorowicz, . (2019). Federalism. In: Congleton, R. D., Grofman, B. & Voigt, S. (eds.), <i>Oxford Handbook of Public Choice Vol. 2</i> (pp. 72–93). Oxford: Oxford University Press. <p>Additional literature will be discussed in the lectures and tutorials</p>
<p>Additional information & links</p>	<p>Important information and last-minute announcements will also be posted on the department's website: https://uni-freiburg.de/wiwi-ordo/</p>

Module	Principles of Finance		
Area of study/Profile	► Specialization Course: Finance		
Recommended semester	2 nd semester	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Eva Lütkebohmert-Holtz	Work load	Ca. 180 hours
ECTS (credit points)	6 ECTS	Contact hours (SWS)	2h Lecture 2h Tutorial
Course type	<ul style="list-style-type: none"> ▪ Lecture ▪ Tutorial 	Language	English
Rotation	Every summer semester		
Requirements			
Learning objectives	Introduction to basic concepts of asset pricing and the valuation of contingent claims		
Content	<p>This course introduces the basic concepts of asset pricing and the valuation of contingent claims. Asset pricing in complete markets generates strong results such as information efficiency and the concepts of a market portfolio and a market price of risk. Moreover, in dynamically complete markets simple arbitrage techniques allow to value derivatives such as options. Empirically, however, the predictions based on complete markets are often rejected. So-called anomalies suggest that many - if not most - real markets are incomplete. Therefore, the second part introduces elements of valuation in incomplete markets when the property of equilibrium prices to communicate private information is rather limited.</p>		
Examination type	120 min written exam at the end of the semester		
Literature	<ul style="list-style-type: none"> ▪ Back: <i>Asset Pricing and Portfolio Choice Theory</i>, 2nd Ed., Oxford University Press, 2017. ▪ Cochrane: <i>Asset Pricing</i>, Princeton University Press, 2005. ▪ Danthine, Donaldson: <i>Intermediate Financial Theory</i>, 3rd Ed., Academic Press, 2015. ▪ Elton, Gruber, Brown, Goetzman <i>Modern Portfolio Theory and Investment Analysis</i>, 6th Ed., John Wiley & Sons, 2003 ▪ Gitman: <i>Principles of Managerial Finance</i>, 11th ed., Addison-Wesley, 2006. ▪ Lengwiler: <i>Microfoundations of Financial Economics</i>, Princeton Series in Finance, Princeton University Press, 2004 ▪ LeRoy, Werner: <i>Principles of Financial Economics</i>, Cambridge University Press, 2001. ▪ Ma: <i>Advanced Asset Pricing Theory</i>, Series in Quantitative Finance, Vol. 2, Imperial College Press, 2011. 		
Additional information & links	For further information, please visit our website: https://www.finance.uni-freiburg.de/		

Module	Electronic Markets		
Area of study	<ul style="list-style-type: none"> ▶ Specialization Course: Digital Markets ▶ Economics and Politics ▶ Finance 		
Recommended Semester	1. - 4. semester	Mandatory/Elective	Elective
Module Coordinator	Prof. Dr. Dirk Neumann	Workload	Ca. 180 hours
ECTS (credit points)	6 ECTS	SWS	2h Lecture 2h Exercise
Course Type	<ul style="list-style-type: none"> ▪ Lecture ▪ Exercise 	Language	English
Rotation	Summer term		
Requirements	No special requirements		
Learning/ Qualification Target	<p>Electronic markets are an essential building block of today's networked service economy. We face them in automated stock exchanges, auctions at ebay and Google, as well as in industrial contracting. By enabling the trade and allocation of frequencies for wireless communication (UMTS, LTE) and emission certificates, electronic markets shape the future of our planet, our economies, and our societies. However, the design and implementation of market mechanisms is highly complex. Markets need to be protected from cheating by individual agents or full-blown market failures. The lecture "Electronic Markets" seeks to provide students with an understanding of how electronic market platforms are analyzed, designed, and introduced.</p>		
Content	<p>The topics covered in the lecture can be divided into three broad areas:</p> <ul style="list-style-type: none"> ▪ <i>The microstructure.</i> This area includes rules that define how markets operate and covers, for instance, a recap of game theory and auction rules for single-unit and combinatorial auctions. This is the main focus of the lecture. ▪ <i>The IS infrastructure.</i> This area contains issues concerning the implementation of electronic markets, such as computational complexity. ▪ <i>The business structure.</i> This area outlines how the electronic market is offered to its customers and covers issues such as enforcement, trust, and monitoring. <p>Students learn to comprehend, to enhance, and to evaluate the design potentials of electronic market platforms. The participation in the exercise sessions is highly recommended. During the exercise sessions, students will get hands-on experiences with game-theoretical experiments and different auctions formats.</p>		
Examination Type	<p>Prüfungsleistung (benotet): Written exam Studienleistung: Achieving 2/3 (i.e., 66%) of the points in the exam.</p>		

Literature	<ul style="list-style-type: none">▪ Roth, A. The Economist as Engineer: Game Theory, Experimental Economics and Computation as Tools for Design Economics. <i>Econometrica</i> 70(4): 1341-1378, 2002.▪ Weinhardt, C. ,Holtmann, C., Neumann, D. Market Engineering. <i>Wirtschaftsinformatik</i> 45(6): 635-640, 2003.▪ Wolfstetter, E. <i>Topics in Microeconomics - Industrial Organization, Auctions, and Incentives</i>. Cambridge: Cambridge University Press, 1999.
Additional Information & Links	https://www.is.uni-freiburg.de/

Modul		Digital and Network Economics	
Area of study	<ul style="list-style-type: none"> ▶ Specialization Course: Digital Markets ▶ Economics and Politics ▶ Finance 		
Recommended Semester	2 nd semester	Mandatory/Elective	Elective
Module Coordinator	Prof. Dr. Germain Gaudin	Workload	180 hours
ECTS (credit points)	6 ECTS	Contact Hours (SWS)	2h (L) 2h (T)
Course Type	<ul style="list-style-type: none"> • Lecture • Tutorial 	Language	English
Rotation	Every summer semester		
Requirements	<ul style="list-style-type: none"> • Strong command of intermediate/advanced microeconomics. The following texts are suitable for preparation: M. J. Osborne and A. Rubinstein: <i>Models in Microeconomic Theory</i>, Open Book Publishers, 2020 (electronic version freely available on the publisher's website), and G. A. Jehle and P. J. Reny: <i>Advanced Microeconomic Theory</i>, FT Prentice Hall / Pearson, 3rd Edition, 2011. • The courses Advanced Microeconomics I is <u>strongly recommended</u> as a prerequisite. • Good command of industrial organization. The following text is suitable for preparation: P. Belleflamme and M. Peitz: <i>Industrial Organization: Markets and Strategies</i>, Cambridge University Press, 2nd Edition, 2015. • The courses Industrial Organization is <u>recommended</u> as a prerequisite. • Strong notions in mathematics 		
Learning/Qualification Target	<ul style="list-style-type: none"> • Provide students with a solid foundation in microeconomic theory applied to network industries and digital markets, using mathematical techniques. • Provide students with a deeper knowledge in the relevant economic effects of digital technology. • Provide students with a deeper knowledge in the relevant economic effects that prevail in network industries. 		
Content	<p>This course will cover various microeconomic aspects that are particularly relevant to network industries and the digital economy. The first part of the course will cover "Network economics," i.e. the economic analysis of so-called network industries such as telecommunications, energy, railways, utilities, etc.</p> <ol style="list-style-type: none"> 1. Introduction to Network Economics 2. Natural monopoly 3. Capacity constraints, externalities, and pricing 4. Regulation in Network industries <p>The second part of the course will cover "Digital Economics," i.e. the economic analysis of the changes in economic activity stemming from digital technology. It will build on the notions introduced in the first part of the course.</p>		

	<ol style="list-style-type: none">1. Introduction to Digital Economics2. Privacy3. Recommendation4. Platforms and Advertising
Examination Type	Written examination at the end of the semester
Literature	<ul style="list-style-type: none">• Goldfarb, A., and Tucker, C., "Digital Economics," <i>Journal of Economic Literature</i>, 2019, 57(1), 3-43.• Knieps, G., <i>Network Economics: Principles – Strategies – Competition Policy</i>, Springer, 2015.• Belleflamme, P., and Petz, M., <i>The Economics of Platforms – Concepts and Strategy</i>, CUP, 2021.
Additional Information & Links	https://www.competition.uni-freiburg.de/

4.4. Electives

Module	Advanced Methods in Dynamic Macroeconomics		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Economics and Politics ▶ Finance ▶ Digital Markets 		
Recommended semester	2nd or higher	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Hillebrand	Work load	about 120 hours
ECTS (credit points)	6 ECTS	Contact hours (SWS)	2h Lecture 2h Tutorial
Course type	<ul style="list-style-type: none"> • Lecture • Tutorial 	Language	English
Rotation	Summer Semester		
Requirements	<ul style="list-style-type: none"> • Completion of Advanced Macroeconomics I or a similar class • Basic understanding of mathematics and programming 		
Learning/ qualification target	Successful participants are able to use MATLAB and the DYNARE package to solve small and medium-scale DSGE models of growth, business cycles, monetary policy and climate change.		
Content	<p>This course equips students with advanced numerical tools to calibrate, solve, and simulate macroeconomic models. Students get used to the analytical frameworks and are guided in the application of numerical methods. The models to be considered are well-known workhorses used in policy advice at central banks, governmental institutions and research departments.</p> <p>Course outline (tentative):</p> <ol style="list-style-type: none"> 1. Computational methods: approximation and perturbation 2. Functional methods and their applications 3. Solving non-stationary models using projection methods 4. Solving New-Keynesian DSGE models 5. Recursive methods for models of heterogeneous agents* <p>*Time permitting</p>		
Examination type	<ul style="list-style-type: none"> ▪ Numerical assignments 		
Literature	<ul style="list-style-type: none"> • Heer, B. & Maussner, A. (2009): <i>Dynamic general equilibrium modeling: Computational methods and applications</i>. Springer. • Caldara, Dario, et al. (2012): "Computing DSGE models with recursive preferences and stochastic volatility." <i>Review of Economic Dynamics</i>, 15 (2), 188-206. • Reiter, Michael (2009): "Solving heterogeneous-agent models by projection and perturbation." <i>Journal of Economic Dynamics and Control</i>. 33 (3), 649-665. • Den Haan, Wouter J., Kenneth L. Judd, and Michel Juillard (2010): "Computational suite of models with heterogeneous agents: Incomplete markets and aggregate uncertainty." <i>Journal of Economic Dynamics and Control</i>. 34 (1), 1-3. 		
Additional information & links	For further information, please see the chair's website http://www.macro.uni-freiburg.de/		

Module	Applied Bayesian Econometrics		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Finance ▶ Information Systems and Network Economics ▶ Digital Markets 		
Recommended Semester	3 rd semester	Mandatory/Elective	Elective
Module Coordinator	Dr. Christoph Frey	Workload	Approx. 180 hours
ECTS (credit points)	6 ECTS	Contact Hours (SWS)	2h Lecture 2h Exercise Session
Course type	1 Lecture 1 Exercise Session	Language	English
Frequency taught	Irregular		
Requirements	Knowledge of mathematics, statistics, probability theory, and regression analysis (estimation and hypothesis testing). Knowledge of Python coding is essential for the exercise sessions.		
Learning/ qualification target	<p>This course aims at providing students with the essential tools to understand and use modern Bayesian methods for applications to economics and finance. Upon successful completion of this course, students should be able to:</p> <ul style="list-style-type: none"> • apply the Bayesian toolbox to real-life economic problems in economics and finance, • write their own Python code implementing standard Bayesian algorithms, and <p>critically interpret empirical findings while accounting for the uncertainty inherent in economic data.</p>		
Content	<p>The course covers the fundamentals of Bayesian inference and its application to (high-dimensional) datasets in economics and finance. It emphasizes both theoretical foundations and empirical implementation from a modern perspective. Besides lectures, the course entails tutorial sessions where students implement various Bayesian models in Python.</p> <p>The course is divided into two parts:</p> <ul style="list-style-type: none"> • Part I (weeks 1 to 6) introduces fundamental Bayesian concepts. It covers subjective probability, the linear model, Monte Carlo integration, and the implementation of MCMC algorithms like Gibbs sampling and Metropolis-Hastings. It concludes with the logic of shrinkage and regularization using Minnesota priors. <p>Part II (weeks 7 to 14) focuses on recent developments in Bayesian techniques with classical applications in economics and finance. In particular, in the field of macroeconomics, the course covers Bayesian Vector Autoregressions (BVARs) for forecasting and state-space models with time-varying parameters. In the field of finance, topics include stochastic volatility, portfolio choice, and the analysis of the "factor zoo". In the area of microeconomics, the focus is on modern Bayesian machine learning for causal inference (e.g. the estimation of heterogeneous treatment effects).</p>		
Examination type	<p>Final Exam (90 minutes)</p> <p>In the exam you may use a non-programmable calculator, a hard copy of a German-English dictionary book and a one-sided A4 hand-written cheat sheet.</p>		
Literature	Introductory Textbooks		

	<ul style="list-style-type: none"> • Chan, Joshua, et al. <i>Bayesian econometric methods</i>. Cambridge University Press, 2019. • Gelman, Andrew, et al. <i>Bayesian data analysis</i>. Chapman and Hall/CRC, 2013. • Geweke, John. <i>Contemporary Bayesian econometrics and statistics</i>. John Wiley & Sons, 2005. • Greenberg, Edward. <i>Introduction to Bayesian Econometrics</i>. Cambridge University Press, 2013. • Koop, Gary M. <i>Bayesian econometrics</i>. Wiley, 2003. • Lambert, Ben. <i>A student's guide to Bayesian statistics</i>. Sage Publishing, 2018. • McElreath, Richard. <i>Statistical rethinking: A Bayesian course with examples in R and Stan</i>. Chapman and Hall/CRC, 2018. <p>Core Papers</p> <ul style="list-style-type: none"> • Avramov, Doron, and Guofu Zhou. "Bayesian portfolio analysis." <i>Annu. Rev. Financ. Econ.</i> 2.1 (2010): 25-47. • Casella, George, and Edward I. George. "Explaining the Gibbs sampler." <i>The American Statistician</i> 46.3 (1992): 167-174. • Geweke, John. "Bayesian inference in econometric models using Monte Carlo integration." <i>Econometrica: Journal of the Econometric Society</i> (1989): 1317-1339. • Giannone, Domenico, Michele Lenza, and Giorgio E. Primiceri. "Economic predictions with big data: The illusion of sparsity." <i>Econometrica</i> 89.5 (2021): 2409-2437. • Hill, Jennifer L. "Bayesian nonparametric modeling for causal inference." <i>Journal of Computational and Graphical Statistics</i> 20.1 (2011): 217-240. • Hoffman, Matthew D., and Andrew Gelman. "The No-U-Turn sampler: adaptively setting path lengths in Hamiltonian Monte Carlo." <i>J. Mach. Learn. Res.</i> 15.1 (2014): 1593-1623. • Jensen, Theis Ingerslev, Bryan Kelly, and Lasse Heje Pedersen. "Is there a replication crisis in finance?" <i>The Journal of Finance</i> 78.5 (2023): 2465-2518. • Primiceri, Giorgio E. "Time varying structural vector autoregressions and monetary policy." <i>The Review of economic studies</i> 72.3 (2005): 821-852. <ul style="list-style-type: none"> ▪ Further references will be given throughout the course.
Additional information & links	<p>The course is given in three blocks.</p> <p>For further information about the course, please visit the chair's homepage: https://uni-freiburg.de/econ-econometrics/teaching/</p> <p>All course material, updates, and other relevant information will be available on ILIAS and on GitHub.</p>

Module	Business and Economic Forecasting		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Finance ▶ Information Systems and Network Economics ▶ Digital Markets 		
Recommended Semester	2 nd or 4 th	Mandatory/Elective	Elective
Module Coordinator	Prof. Dr. Roxana Halbleib & Alessandro Morico	Workload	Approx. 180 hours
ECTS (credit points)	6	Contact Hours (SWS)	2h Lecture 2h Exercise Session
Course type	1 Lecture 1 Exercise Session	Language	English
Frequency taught	Irregular		
Requirements	<p>Basic requirements:</p> <ul style="list-style-type: none"> • Intermediate Econometrics • Sound knowledge of a programming language of choice (Matlab, R, Python, etc). <p>Recommended requirements:</p> <ul style="list-style-type: none"> • Financial Time Series Analysis 		
Learning/ qualification target	<p>This course equips students with state-of-the-art techniques for predicting future outcomes of business and economic phenomena with quantifiable certainty. Upon successful completion, participants will be able to not only implement and code forecasting models but also evaluate their performance on real-life datasets and compare them against competitors.</p>		
Content	<p>This course covers modern forecasting techniques with a balanced focus on econometric theory and empirical applications, and it is expected to make extensive use of statistical programming.</p> <p>Course outline:</p> <ol style="list-style-type: none"> 1. Elements of forecasting 2. Dynamic models: estimation, misspecification testing and forecasting 3. Modelling and forecasting trends and seasonality in economics 4. Forecasting under structural instability: static vs time-varying parameter models 5. Ex-post evaluation (DM statistics, Mincer-Zarnowitz, etc.) and forecast combinations 6. *Forecasting with many predictors I: diffusion indexes 7. *Forecasting with many predictors II: Lasso and Ridge shrinkage 8. *Model Confidence Set <p>*Time permitting</p>		
Examination type	Final Exam (90 minutes)		
Literature	<ul style="list-style-type: none"> • Diebold, F.X. (2001): <i>Elements of forecasting</i> (2nd Ed), South Western/Thomson Learning. • Brockwell, P.J. & Davis, R.A. (2002): <i>Introduction to time series and forecasting</i> (2nd Ed), Springer. • Stock, J.H & Watson, M.W. (2020): <i>Introduction to Econometrics</i> (4th Ed), Pearson. • Pyndyck, R.S. & Rubinfeld, D.L. (1998): <i>Econometric models and economic forecasts</i> (4th Ed), McGraw-Hill. 		

	<ul style="list-style-type: none">• Selected papers from the literature as additional material.
Additional information & links	<p>https://uni-freiburg.de/econ-econometrics/teaching/ The course material, updates and all relevant information is available on ILIAS.</p>

Module	Business Analytics and Machine Learning		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Economics and Politics ▶ Finance ▶ Digital Markets 		
Recommended semester	2	Mandatory/elective	Elective
Module coordinator	Dr. Bernhard Lutz	Work load	150 hours
ECTS (credit points)	6	Contact hours (SWS)	4
Course type	Lecture	Language	English
Rotation	Irregular		
Requirements	<p>Mandatory: basic mathematical knowledge about vectors, matrices, and statistics. Recommended: Basic knowledge in Python, R, or any other programming language.</p>		
Learning/ qualification target	<p>Students are familiar with the goals and challenges of business analytics. Students gain methodological skills in descriptive analytics, predictive analytics, and prescriptive analytics. Students can apply the theoretical concepts in Python.</p>		
Content	<p>The course consists of weekly units and exercises.</p>		
Examination type	<p>Written exam (90 minutes) Studienleistung: Achieving 2/3 (i.e., 66%) of the points in the exam.</p>		
Literature	<ul style="list-style-type: none"> • Modern Business Analytics: Increasing the Value of Your Data with Python and R, 2025, Deane Larson • Practical Business Analytics Using R and Python: Solve Business Problems Using a Data-driven Approach, 2023 Umesh Hodeghatta, Umesha Nayak • Practical Statistics for Data Scientists: 50+ Essential Concepts Using R and Python, 2020, Peter Bruce, Andrew Bruce, Peter Gedeck 		
Additional information & links			

Module	Causal Analysis in Labor Economics using R		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Economics and Politics ▶ Finance ▶ Digital Markets 		
Recommended semester	3. – 4. semester	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Alexander Spermann Prof. Dr. Günther Schulze	Work load	Ca. 120 hours
ECTS (credit points)	4 ECTS	Contact hours (SWS)	2 hours
Course type	Online lecture (live, recorded) with complementary learning videos)	Language	English
Rotation	Irregular		
Requirements	No special requirements		
Learning/ qualification target	Students will be able to explain different techniques in causal analysis in detail using coding and visualization in R. Lectures allow for group work for solving problem sets and presenting solutions in class. Students get insights into the advantages and drawbacks of different techniques to assess policy-relevant questions. Some topics (e.g. gender pay gap, basic income scheme, human capital formation) imply a broader and critical view on developments that are currently transforming our society.		
Content	<ul style="list-style-type: none"> • Modern approach to Econometrics • Fundamental evaluation problem • Potential outcome approach • Methods: RCT, IV, BAE, DiD, RDD • Introduction to Causal Machine Learning • Labor Market and Education 		
Examination type	Exam, 60 min.		
Literature	<ul style="list-style-type: none"> - Angrist, J. D., and Pischke, J.: Mastering Metrics, The Path from Cause to Effect, Princeton University Press, current edition. - Boeri, T., and Van Ours, J.: The economics of imperfect labor markets. Princeton University Press, current edition. - Heiss, F.: Using R for Introductory Econometrics, Düsseldorf, current edition. - James, G. et al. (2017): An Introduction to Statistical Learning, Springer, New York. - Klinkhammer, D., & Spermann, A. (2020): Eine Einführung in die empirische Kausalanalyse und Machine Learning mit R, UTB-Lehrbuch, wbv, Gütersloh. - Taddy, M. (2019): Business Data Science, Mc GrawHill, New York. - Wooldridge, J.: Introductory Econometrics, A Modern Approach, Cengage Learning, current edition. + Selected papers 		

Additional information & links	The course is held by Prof. Dr. Alexander Spermann. https://www.iep.uni-freiburg.de/teaching
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Module	Derivatives Pricing		
Area of study / Profiles	► Finance		
Recommended semester	Second Year	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Eva Lütkebohmert-Holtz	Work load	180 hours
ECTS (credit points)	6 ECTS	Contact hours (SWS)	2h Lecture 2h Tutorial
Course type	Lecture	Language	English
Rotation	Irregular		
Requirements	<ul style="list-style-type: none"> • Principles of Finance • Futures and Options • R-Course (recommendation) 		
Learning/ qualification target	<p>Introduction to the Black-Scholes model and the basics of model-based derivatives pricing.</p> <p>Introduction to concepts of pricing, calibration and simulation.</p>		
Content	<p>Topics which will be discussed in the lecture include:</p> <ul style="list-style-type: none"> • Multiperiod discrete models • Continuous time models • Classic Black-Scholes model; • Option pricing and Greeks evaluation; • Monte Carlo simulation • Exotic derivatives • Stochastic volatility 		
Examination type	120 min. written examination at the end of the term		
Literature	<ul style="list-style-type: none"> • Hull, J.C.: Options, Futures, and other Derivatives, 7. ed., Prentice Hall, 2009. • Materials supplied during the course 		
Additional information & links	Course outlines, dates, and further information can be found on the webpage of the department: http://www.finance.uni-freiburg.de/		

Modul		Digital and Network Economics	
Area of study/ Profiles	<ul style="list-style-type: none"> ▶ Specialization Course: Digital Markets ▶ Economics and Politics ▶ Finance 		
Recommended Semester	2 nd semester	Mandatory/Elective	Elective
Module Coordinator	Prof. Dr. Germain Gaudin	Workload	180 hours
ECTS (credit points)	6 ECTS	Contact Hours (SWS)	2h (L) 2h (T)
Course Type	<ul style="list-style-type: none"> • Lecture • Tutorial 	Language	English
Rotation	Every summer semester		
Requirements	<ul style="list-style-type: none"> • Strong command of intermediate/advanced microeconomics. The following texts are suitable for preparation: M. J. Osborne and A. Rubinstein: <i>Models in Microeconomic Theory</i>, Open Book Publishers, 2020 (electronic version freely available on the publisher's website), and G. A. Jehle and P. J. Reny: <i>Advanced Microeconomic Theory</i>, FT Prentice Hall / Pearson, 3rd Edition, 2011. • The courses Advanced Microeconomics I is <u>strongly recommended</u> as a prerequisite. • Good command of industrial organization. The following text is suitable for preparation: P. Belleflamme and M. Peitz: <i>Industrial Organization: Markets and Strategies</i>, Cambridge University Press, 2nd Edition, 2015. • The courses Industrial Organization is <u>recommended</u> as a prerequisite. • Strong notions in mathematics 		
Learning/ Qualification Target	<ul style="list-style-type: none"> • Provide students with a solid foundation in microeconomic theory applied to network industries and digital markets, using mathematical techniques. • Provide students with a deeper knowledge in the relevant economic effects of digital technology. • Provide students with a deeper knowledge in the relevant economic effects that prevail in network industries. 		
Content	<p>This course will cover various microeconomic aspects that are particularly relevant to network industries and the digital economy. The first part of the course will cover "Network economics," i.e. the economic analysis of so-called network industries such as telecommunications, energy, railways, utilities, etc.</p> <ol style="list-style-type: none"> 1. Introduction to Network Economics 2. Natural monopoly 3. Capacity constraints, externalities, and pricing 4. Regulation in Network industries <p>The second part of the course will cover "Digital Economics," i.e. the economic analysis of the changes in economic activity stemming from digital technology. It will build on the notions introduced in the first part of the course.</p>		

	<ol style="list-style-type: none">1. Introduction to Digital Economics2. Privacy3. Recommendation4. Platforms and Advertising
Examination Type	Written examination at the end of the semester
Literature	<ul style="list-style-type: none">• Goldfarb, A., and Tucker, C., "Digital Economics," <i>Journal of Economic Literature</i>, 2019, 57(1), 3-43.• Knieps, G., <i>Network Economics: Principles – Strategies – Competition Policy</i>, Springer, 2015.• Belleflamme, P., and Petz, M., <i>The Economics of Platforms – Concepts and Strategy</i>, CUP, 2021.
Additional Information & Links	https://www.competition.uni-freiburg.de/

Module	Economics of Social Justice		
Area of study / Profiles	► Economics and Politics		
Recommended Semester	1. - 4. semester	Mandatory/Elective	Elective
Module Coordinator	Prof. Dr. Bernhard Neumärker	Workload	Ca. 120 – 180 hours
ECTS (credit points)	4 or 6 ECTS	Contact Hours (SWS)	2h Lecture 2h Tutorial
Course Type	<ul style="list-style-type: none"> ▪ Lecture ▪ Tutorial 	Language	English
Rotation	Winterterm		
Requirements	Lectures in “Advanced Microeconomics” and “Economic Policy and Public Choice” are recommended		
Learning/ Qualification Target	<p>Students gain a thorough understanding of the role of justice and fairness in economic analysis and collective decision-making. They are able to distinguish and apply theories and normative concepts of justice within the context of economic policy.</p> <p>They learn to use both positive and normative analytical frameworks to assess questions of social justice, and to systematically apply these approaches to concrete policy problems.</p> <p>Building on this foundation, they are able to critically reflect on and contribute to the development of just constitutional rules and institutional arrangements for society.</p>		
Content	<p>Practical policy choices involve sacrificing the well-being and the means of some for the benefits of others, as compared with alternatives that could have been chosen. Even if it is not the only thing that matters, the problem of distributive justice is essential, omnipresent and inevitable. Economists not only have failed to answer the questions of the just distribution, but have tried harder to avoid the problem than to solve it. They have a great deal to say about efficiency and potential compensation, but they are nearly silent concerning meaningful principles of justice and their effects on economic policy. One has to integrate the following normative and positive aspects of justice into the analysis of economic policy: Is social justice equality? Why (or why not)? Among whom? Is equality to each according to her abilities, her work or her consumption? Or else is it equality of opportunities, liberties, powers and/or rights? Do we need a just process or a just outcome of policy making? What are the most important elements of a just constitution? How is the reason of just rules applied to daily economic policy?</p>		
Examination Type	<ul style="list-style-type: none"> ▪ 4 ECTS: Written exam (60 min) ▪ 6 ECTS: Written exam (90 min) 		
Literature	<ul style="list-style-type: none"> ▪ Kolm, S.-C.: Modern theories of justice, Cambridge et al. 1996. ▪ Konov, J.: Which is the fairest one of all? A positive analysis of justice theories, in: Journal of economic literature 41 (2003), 1188-1239. ▪ Moulin, H.J.: Cooperative microeconomics, Princeton 1995. ▪ Mueller, D.C.: Public choice III, Cambridge 2003. ▪ Roemer, J.E.: Theories of distributive justice, Cambridge et al. 1996. ▪ Schotter, A.: Free Market Economics, 2nd Ed., Oxford et al. 1990. 		

	<ul style="list-style-type: none">▪ Silver, M.: Foundations of Economic Justice, Oxford et al. 1989.▪ Zajac, E.E.: Political economy of fairness, Cambridge/MA 1995.
Additional Information & Links	Further information can be viewed at: https://gwp.uni-freiburg.de/

Module	Electronic Markets		
Area of study/ Profiles	<ul style="list-style-type: none"> ▶ Specialization Course: Digital Markets ▶ Economics and Politics ▶ Finance 		
Recommended Semester	1. - 4. semester	Mandatory/Elective	Elective
Module Coordinator	Prof. Dr. Dirk Neumann	Workload	Ca. 180 hours
ECTS (credit points)	6 ECTS	SWS	2h Lecture 2h Exercise
Course Type	<ul style="list-style-type: none"> ▪ Lecture ▪ Exercise 	Language	English
Rotation	Summer term		
Requirements	No special requirements		
Learning/ Qualification Target	<p>Electronic markets are an essential building block of today's networked service economy. We face them in automated stock exchanges, auctions at ebay and Google, as well as in industrial contracting. By enabling the trade and allocation of frequencies for wireless communication (UMTS, LTE) and emission certificates, electronic markets shape the future of our planet, our economies, and our societies. However, the design and implementation of market mechanisms is highly complex. Markets need to be protected from cheating by individual agents or full-blown market failures. The lecture "Electronic Markets" seeks to provide students with an understanding of how electronic market platforms are analyzed, designed, and introduced.</p>		
Content	<p>The topics covered in the lecture can be divided into three broad areas:</p> <ul style="list-style-type: none"> ▪ <i>The microstructure.</i> This area includes rules that define how markets operate and covers, for instance, a recap of game theory and auction rules for single-unit and combinatorial auctions. This is the main focus of the lecture. ▪ <i>The IS infrastructure.</i> This area contains issues concerning the implementation of electronic markets, such as computational complexity. ▪ <i>The business structure.</i> This area outlines how the electronic market is offered to its customers and covers issues such as enforcement, trust, and monitoring. <p>Students learn to comprehend, to enhance, and to evaluate the design potentials of electronic market platforms. The participation in the exercise sessions is highly recommended. During the exercise sessions, students will get hands-on experiences with game-theoretical experiments and different auctions formats.</p>		
Examination Type	<p>Prüfungsleistung (benotet): Written exam Studienleistung: Achieving 2/3 (i.e., 66%) of the points in the exam.</p>		

Literature	<ul style="list-style-type: none">▪ Roth, A. The Economist as Engineer: Game Theory, Experimental Economics and Computation as Tools for Design Economics. <i>Econometrica</i> 70(4): 1341-1378, 2002.▪ Weinhardt, C. ,Holtmann, C., Neumann, D. Market Engineering. <i>Wirtschaftsinformatik</i> 45(6): 635-640, 2003.▪ Wolfstetter, E. <i>Topics in Microeconomics - Industrial Organization, Auctions, and Incentives</i>. Cambridge: Cambridge University Press, 1999.
Additional Information & Links	https://www.is.uni-freiburg.de/

Module	Empirical Research in Accounting		
Area of study / Profiles	► Finance		
Recommended semester	1. or 3.	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Marcus Bravidor	Work load	180 h
ECTS (credit points)	6	Contact hours (SWS)	2 SWS Lecture + 2 SWS Tutorial
Course type	Lecture	Language	English
Rotation	Each Winter Term		
Requirements	No formal requirements. You should know the basics of financial reporting practices and standards and have an interest in quantitative research methods.		
Learning/ qualification target	<p>Upon successful completion of the course, students will be able to:</p> <ol style="list-style-type: none"> 1. Explain key questions, focus areas, and the practical relevance of empirical research in financial accounting and auditing, and analyze its significance for various stakeholders. 2. Critically analyze academic accounting research articles, identify underlying economic concepts, and evaluate research designs and assumptions. 3. Extract relevant findings from research literature and apply them to practical questions by independently conducting empirical analyses in R. 4. Develop original research ideas, ground them in relevant academic literature, and apply established empirical research designs to accounting-related topics. 5. Collaborate effectively in teams to plan, conduct, and communicate research results in a clear and structured manner. 		
Content	<p>This course is an introduction to empirical research in financial accounting and auditing. Understanding and applying the methodology of empirical research, from its foundational questions to the application of theories and methods, is critical for interpreting results and drawing conclusions that are relevant to practice and policy. Students will learn to evaluate research methods, understand the strengths and limitations of different research designs, and interpret results within a broader economic context.</p> <p>Research is a practical endeavor. As such, this course emphasizes active participation and interaction. In the tutorial, you will learn and practice how to set up and conduct your own research in R. It is recommended to undertake this course prior to engaging in seminars or starting a master's thesis.</p>		
Examination type	Presentations and written assignments.		
Literature	Will be provided during the course.		
Additional information & links	https://uni-freiburg.de/econ-faa/		

Modul	Financial Time Series Analysis		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Finance ▶ Information Systems and Network Economics ▶ Digital Markets 		
Recommended semester	3 rd semester	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Roxana Halbleib & Jasper Rennspies	Work load	Approx. 200 hours
ECTS (credit points)	6 ECTS	Contact hours (SWS)	2h Lecture 2h Exercise Session
Course type	<ul style="list-style-type: none"> ▪ Lecture ▪ Exercise/ Computer Session 	Language	English
Rotation	Irregular		
Requirements	Statistics, Mathematics, Econometrics, .		
Learning/ qualification target	This course aims at endowing students with the necessary econometric knowledge and tools for undergoing empirical research in finance.		
Content	The course covers the fundamentals of time series analysis and financial econometrics with emphasis on both theoretical foundations and empirical applications. The course aims at sharpening students' view on the limitations of the theoretical models and their empirical applications as well as at equipping students with a profound knowledge of financial data handling and programming skills in Python. The topics covered are: univariate and multivariate ARMA models, GARCH models, Realized Volatility, Value-at-Risk, Expected Shortfall, MGARCH models, Realized Covariance, etc.		
Examination type	Final Exam (90 minutes) In the exam you may use a non-programmable calculator, a hard copy of a German-English dictionary book and a one-sided A4 hand-written cheat sheet.		
Literature	<ul style="list-style-type: none"> • Tsay (2010): <i>Analysis of Financial Time Series</i>, Wiley, New York • Andersen T., Davis R., Kreiß J. and Mikosch T. (2009): <i>Handbook of Financial Time Series</i>, Springer. • Enders, W. (2014): <i>Applied Econometric Time Series</i>, 4th edition, Wiley. • Hamilton (1994): <i>Time Series Analysis</i>, Princeton University Press, Princeton. • Hayashi (2000): <i>Econometrics</i>, Princeton University Press, Princeton. • Lütkepohl, H. & Kräzig, M. (2004): <i>Applied Time Series Econometrics</i>, Cambridge University Press. • Lütkepohl (2005): <i>New Introduction to Multiple Time Series</i>, Springer, Heidelberg. • Campbell, J. Y., A. W. Lo and A. C. MacKinlay (1997): <i>The Econometrics of Financial Markets</i>, Princeton University Press. • Francq, C. and Zakoian J. M. (2011): <i>GARCH models: structure, statistical inference and financial applications</i>, Wiley.com. • Franses & van Dijk (2000): <i>Nonlinear Time Series Models in Empirical Finance</i>, Cambridge University Press Cambridge. • Gourioux C. and J. Jasiak (2001): <i>Financial Econometrics</i>, Princeton University Press. 		

	<ul style="list-style-type: none">• McNeil, A. J., R. Frey and P. Embrechts (2015): <i>Quantitative Risk Management: Concepts, Techniques and Tools</i>, Princeton University Press.
Additional information & links	<p>https://uni-freiburg.de/econ-econometrics/teaching/ The course material, updates and all relevant information will be available on ILIAS.</p>

Module	Futures and Options		
Area of study / Profiles	► Finance		
Recommended semester	3 rd semester	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Eva Lütkebohmert-Holtz	Work load	Ca. 180 hours
ECTS (credit points)	6 ECTS	Contact hours (SWS)	2h Lecture 2h Tutorial
Course type	<ul style="list-style-type: none"> ▪ Lecture ▪ Tutorial 	Language	English
Rotation	Every winter semester		
Prerequisites	Principles of Finance (recommended)		
Learning objectives	Introduction to basic principles of risk-neutral valuation of futures, standard and exotic options as well as interest rate derivatives.		
Content	<p>This course covers an introduction to financial markets and products. Besides futures and standard put and call options of European and American type we also discuss interest-rate sensitive instruments such as swaps.</p> <p>For the valuation of financial derivatives, we first introduce financial models in discrete time as the Cox-Ross-Rubinstein model and explain basic principles of risk-neutral valuation. Finally, we will discuss the famous Black-Scholes model which represents a continuous time model for option pricing.</p>		
Examination requirements	120 min. written examination at the end of the term		
Literature	<ul style="list-style-type: none"> ▪ Chance, D.M., Brooks, R.: <i>An Introduction to Derivatives and Risk Management</i>, 8. ed., South-Western, 2009. ▪ Hull, J.C.: <i>Options, Futures, and other Derivatives</i>, 7. ed., Prentice Hall, 2009. ▪ Shreve, S.E.: <i>Stochastic Calculus for Finance I: The Binomial Asset Pricing Model</i>, Springer Finance, 2005. ▪ Strong, R.A.: <i>Derivatives. An Introduction</i>, 2. ed., South-Western, 2004. 		
Additional information & links	For further information, please visit our website: https://www.finance.uni-freiburg.de		

Module	Industrial Organization		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Economics and Politics ▶ Finance ▶ Digital Markets 		
Empfohlenes Semester	1st semester	Pflicht/Wahlpflicht	Elective
Modulbeauftragte/r	Prof. Dr. Germain Gaudin	Arbeitsaufwand	180 hours
ECTS-Punkte	6 ECTS	SWS	4h
Veranstaltungstyp	<ul style="list-style-type: none"> ▪ Lecture ▪ Tutorial 	Sprache	English
Turnus	Every winter semester (except winter semester 2024/25)		
Teilnahmevoraussetzungen	Strong command of intermediate microeconomics and game theory.		
Lern- & Qualifikationsziele	<p>This course builds on basic microeconomics concepts to study in detail the strategic interactions between different firms and between firms and consumers from an economic point of view.</p> <p>Students will become familiar with how markets work when perfect competition is not an acceptable assumption on the supply side.</p> <p>This course is recommended for students aiming at deepening their knowledge in Industrial Organization, regulatory or competition economics, with an aim to pursue a career as economists in large firms, public organizations, economic consultancies, or in a Ph.D. program.</p>		
Inhalt	<p>The course first introduces basic concepts in Industrial Organization to study imperfect competition and the determinants of market power, building on the students' knowledge of microeconomics and game theory. It then proceeds to analyze firms' pricing or product strategies and their effects. The course will also cover important topics in competition policy, such as cartels and merger policy. Finally, the course will then proceed with an analysis of market features that are common to digital markets, such as network effects and two-sided platforms.</p>		
Studien- und Prüfungsleistung(en)	<ul style="list-style-type: none"> ▪ Written examination at the end of the semester 		
Literatur	<ul style="list-style-type: none"> ▪ P. Belleflamme and M. Peitz, <i>Industrial Organization: Markets and Strategies</i>, CUP, 2nd ed., 2015. ▪ J. Tirole, <i>The Theory of Industrial Organization</i>, MIT Press, 1988. 		
Weitere Informationen und Links	https://www.competition.uni-freiburg.de/		

Module	Information for Capital Markets		
Area of study / Profiles	► Finance		
Recommended semester	1. or 3.	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Marcus Bravidor	Work load	180 h
ECTS (credit points)	4	Contact hours (SWS)	2 SWS Lecture
Course type	Lecture	Language	English
Rotation	Each Winter Term		
Requirements	No formal requirements. You should know the basics of financial reporting practices and standards as covered in the lecture "Information for Capital Markets".		
Learning/ qualification target	<p>Upon successful completion of the course, students will be able to:</p> <ol style="list-style-type: none"> 1. Identify, classify, and critically evaluate financial and non-financial sources of information (e.g., annual reports, ESG disclosures) regarding their impact on capital market pricing and stakeholder decision-making. 2. Apply key methods of financial statement analysis and valuation to assess the performance and market value of firms based on public disclosures. 3. Interpret and compare legal and regulatory frameworks that govern financial and non-financial reporting in capital markets, and assess their implications for transparency, investor protection, and compliance. 4. Analyze economic incentives and theoretical foundations underlying the behavior of capital market actors—including preparers, users, and standard setters—and reflect on how these shape reporting practices and information asymmetries. 5. Use digital tools (e.g., financial databases, analytics platforms) to gather, process, and visualize market-relevant information, and communicate findings in a structured and audience-appropriate manner. 6. Collaborate effectively in diverse teams to research and evaluate real-world information cases in capital markets, demonstrating responsibility, openness to feedback, and awareness of ethical and sustainability-related considerations. 		
Content	<p>This course offers an in-depth examination of the role of financial and non-financial information in capital markets. It focuses on how different types of corporate disclosures influence investor decision-making, market valuations, and regulatory developments. The course equips students with analytical and conceptual tools to assess the quality, relevance, and impact of such information.</p> <p>Core components include:</p> <ul style="list-style-type: none"> • <i>Financial Statement Analysis and Valuation</i>: Students learn and apply established techniques to evaluate financial performance and assess firm value, based on publicly available financial statements. • <i>Reporting Standards and Frameworks</i>: The course covers key financial and non-financial reporting standards (e.g., IFRS, sustainability reporting,), enabling students to analyze and compare corporate disclosures in different regulatory contexts. • <i>Theoretical Foundations and Incentive Structures</i>: Students explore the economic theories and incentive mechanisms that 		

	<p>shape the behavior of key actors in capital markets, including preparers, users, auditors, and standard setters.</p> <p>By integrating theoretical knowledge with practical applications, the course enables students to critically reflect on the dynamics of information flow in capital markets and prepares them for roles in investment analysis, financial reporting, policy advising, or further academic research.</p>
Examination type	Exam <i>or</i> presentations and written assignments depending on group size.
Literature	Will be provided during the course.
Additional information & links	www.uni-freiburg.de/econ-faa/

Module	Introduction to Empirical Economics using Stata		
Area of study / Profiles	► Economics and Politics		
Recommended semester	3 rd - 4 th semester	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Günther Schulze Dr. Nikita Zakharov	Work load	Ca. 180 hours
ECTS (credit points)	6 ETCS	Contact hours (SWS)	2h Lecture 2h Tutorial
Course type	<ul style="list-style-type: none"> ▪ Lecture ▪ Tutorial 	Language	English
Rotation	irregular		
Requirements	Good knowledge of Econometrics; the successful completion of Intermediate Econometrics or an equivalent course is strongly recommended (basic statistics is not enough).		
Learning/ qualification target	<p>By the end of the course being able to:</p> <ul style="list-style-type: none"> - Handle data (search, collect, clean, merge into the final datasets) - Describe data (e.g., plotting, comparing, designing descriptive statistics) - Apply causal-inference methods (e.g., instrumental variables, differences-in-differences) in statistical software to replicate and visualize published results in a reproducible workflow - Design alternative empirical approaches to the existing studies - Generate novel empirical results 		
Content	<p>Today, quantitative analysis is the primary tool of economists. The course will introduce students to the statistical software Stata, which is widely used in empirical research. Participants will master data collection, building datasets, data diagnostics, regression analysis, and production of tabulated and graphical output.</p> <p>The lecture part will introduce primary commands with practical examples. The tutorial part will focus on the coding exercises employing datasets from the existing empirical papers on the political economy and development economics.</p>		
Examination type	Exam		
Literature	Literature will be announced at the beginning of the course		
Additional information & links	<p>The course is taught by Dr. Nikita Zakharov.</p> <p>A preliminary registration is required, please check the information on the homepage of Prof. Schulze's chair at https://www.iep.uni-freiburg.de/teaching</p>		

Module	Macroeconomic Models of Climate Change		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Economics and Politics ▶ Finance ▶ Digital Markets 		
Recommended semester	3rd or higher	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Marten Hillebrand	Work load	About 120 hours
ECTS (credit points)	6 ETCS	Contact hours (SWS)	2h Lecture 2h Tutorial
Course type	Lecture	Language	English
Rotation	Winter semester		
Requirements	<p>Course participants are expected to be interested in the problem of climate change and in building models to study alternative climate policies. They should be familiar with advanced macroeconomic models and methods taught in Advanced Macroeconomics 1 and 2 and have a basic understanding of the programming language Python.</p>		
Learning/ qualification target	<p>The course studies the problem of climate change and optimal climate policy from a macroeconomic perspective. Participants build and apply modern macroeconomic models of climate change, calibrate their parameters using empirical data, and simulate them with Python. We build on the framework developed in Golosov et al. (2014) and Hillebrand & Hillebrand (2019, 2023) which is gradually extended to include multiple heterogeneous regions and alternative climate models. Course participants then perform guided variations and simulation experiments of these basic models. The tutorials provide an introduction to programming in Python, build simulation scripts, and discuss the quantitative results.</p>		
Content	<p>Course outline (tentative):</p> <ol style="list-style-type: none"> 1. The climate problem from an economic perspective 2. Optimal climate policy in global models of climate change 3. Optimal climate policies in multi-region models 4. Cooperation and non-cooperation in the multi-region model 		
Examination type	Written homework.		
Literature	<ul style="list-style-type: none"> • Golosov, Hassler, Krusell & Tsyvinski (2014): „Optimal Tax on Fossil Fuel in General Equilibrium“ • Hillebrand & Hillebrand (2019): „Optimal Climate Policies in a Dynamic Multi-Country Equilibrium Model“ • Hillebrand & Hillebrand (2023): „Who Pays the Bill? Climate Change, Taxes, and Transfers in a Multi-Region Growth Model“ • Hillebrand (2025): „Win as a Team or Fail as Individuals-Cooperation and Non-Cooperation in the Climate Tax Game“. <p>Additional references will be given in class</p>		
Additional information & links	<p>For further information, please see the chair's homepage: http://www.macro.uni-freiburg.de/</p>		

Module	Mathematical Methods for Economics and Finance		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Economics and Politics ▶ Finance ▶ Digital Markets 		
Recommended Semester	1 st semester	Mandatory/Elective	Elective
Module Coordinator	Dr. Ernst August v. Hammerstein	Workload	180 hours
ECTS (credit points)	6 ECTS	Contact Hours (SWS)	2h Lecture 2h Tutorial
Course Type	<ul style="list-style-type: none"> ▪ Lecture ▪ Tutorial 	Language	English
Rotation	Winter term		
Requirements	Good command of calculus and linear algebra at the undergraduate level		
Learning / Qualification Target	<p>This lecture is aimed at students of the MSc VWL and MSc Economics (all profiles) who are at the beginning of their studies. Mathematical tools going beyond the undergraduate level are provided. The lecture will cover a range of relevant mathematical tools and techniques that are typically required for further studies in economics.</p> <p>At the end of the course students should be able to understand and apply these tools. The methods discussed in class help students to read current economic research papers and work with economic models. Thus, they should be able to fully concentrate on the economics in their economic courses.</p> <p>During the semester the students practice the methods which are discussed in class with the help of problem sets.</p>		
Content	<ul style="list-style-type: none"> ▪ Topics in Linear Algebra ▪ Multivariate Calculus ▪ Static Optimization ▪ Differential Equations ▪ (Probability Theory) 		
Examination Type	Written exam (180min)		
Literature	The lecture makes heavy use of the following book: Knut Sydsæter et. al., 2008, Further Mathematics for Economic Analysis, 2nd edition, Prentice Hall University Press		
Additional Information & Links	Course outlines, dates, and further information can be found on the webpage of the department: http://www.finance.uni-freiburg.de/		

Module	Portfolio Management		
Area of study / Profiles	► Finance		
Recommended semester	1 st or 3 rd semester	Mandatory/Elective	Elective
Module coordinator	Prof. Dr. Eva Lütkebohmert-Holtz	Workload	180 hours
ECTS (credit points)	6 ECTS	Contact Hours (SWS)	2 Lecture 2 Tutorial
Course type	<ul style="list-style-type: none"> ▪ Lecture ▪ Tutorial 	Language	English
Rotation	Irregular		
Requirements	Basic knowledge in R or Python (recommended)		
Learning objectives	Introduction to security and portfolio analysis, the problem of optimal allocation of assets into a portfolio, as well as the evaluation of investments.		
Content	<p>Topics which will be discussed in the lecture include:</p> <ul style="list-style-type: none"> ▪ classical mean-variance portfolio theory (risk and return, efficient portfolios, determining the efficient frontier) ▪ single- and multi-factor models ▪ selecting among portfolios in the opportunity set ▪ determination of equilibrium security returns and prices (standard CAPM, non-standard forms, empirical tests, arbitrage pricing model) ▪ evaluation of portfolio performance 		
Examination requirements	120 min. written examination at the end of the term		
Literature	<ul style="list-style-type: none"> ▪ Bodie, Z., Kane, A., Marcus, A.J. (2011): <i>Investments and Portfolio Management</i>. 9. ed., McGraw-Hill ▪ Chance, D.M., Brooks, R.: <i>An Introduction to Derivatives and Risk Management</i>, 8. ed., South-Western, 2009. ▪ Elton E., Gruber M., Brown S., Goetzmann W.: <i>Modern Portfolio Theory and Investment Analysis</i>, 9. ed., Wiley ▪ Hull, J.C.: <i>Options, Futures, and other Derivatives</i>, 7. ed., Prentice Hall, 2009. 		
Additional information & links	Course outlines, dates, and further information can be found on the webpage of the department: http://www.finance.uni-freiburg.de/		

Module	Python Course		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Economics and Politics ▶ Finance ▶ Digital Markets 		
Recommended semester	1st Semester	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Eva-Maria Lütkebohmert-Holtz	Work load	180 hours
ECTS (credit points)	6	Contact hours (SWS)	2 Lecture 2 Tutorial
Course type	Lecture + Tutorial	Language	English
Rotation	Irregular		
Requirements	None		
Learning/ qualification target	<ul style="list-style-type: none"> • Mastering data-related tasks by using Python, • Writing Python scripts, • Knowledge of the main Python packages for data processing and analysis, • Effective use of Integrated Development Environments. 		
Content	The lecture covers the basics of Python, commonly used Python packages in the Data Science domain, and efficient programming by using Integrated Development Environments.		
Examination type	60 Minutes written exam		
Literature	https://python-programming.quantecon.org/		
Additional information & links	https://www.finance.uni-freiburg.de/studium-und-lehre-en/studium-und-lehre-en?set_language=en		

Module	The Economics of Corruption		
Area of study / Profiles	► Economics and Politics		
Recommended Semester	3. - 4. semester	Mandatory/Elective	Elective
Module Coordinator	Prof. Dr. Günther Schulze Dr. Nikita Zakharov	Workload	120 (180) hours
ECTS (credit points)	4 or 6 ECTS	Contact Hours (SWS)	2h Reading Course 2h Tutorial
Course Type	<ul style="list-style-type: none"> ▪ Reading Course ▪ Tutorial (optional) 	Language	English
Rotation	Irregular		
Requirements	Prior knowledge of econometrics at an intermediate level is strongly recommended. The course requires intensive reading prior to the reading sessions and active participation in the discussions.		
Learning/ Qualification Target	<p>By the end of the course being able to:</p> <ul style="list-style-type: none"> - Explain core economic theories and empirical findings on corruption across diverse institutional settings - Work with the academic literature (search, select, and summarize). - Analyze and critically review the identification strategies, data limitations, and findings in leading empirical corruption studies, and justify their methodological choices. - Reflect on the ethical and policy implications of researching illicit behavior and formulate evidence-based recommendations. 		
Content	<p>At the core of almost every dysfunctional economy lies a primordial disease – corruption. Yet, the discipline of economics has only recently turned its attention to study this dire phenomenon. This reading course invites you to join the most recent developments in empirical research on the causes and consequences of corruption around the world by surveying cutting edge scientific articles. Our primary focus will be on the econometric design and the empirical methods behind the main findings of the literature. In a tutorial, students present additional complementary material is presented by you and discussed.</p>		
Examination Type	<p>4 ECTS: Exam (60 minutes + 30 min. reading time) 6 ECTS: Exam (60 minutes + 30 min. reading time) + presentation in the tutorial</p>		
Literature	Selected papers, literature list will be available at the beginning of the course		
Additional Information & Links	<p>The course is held by Dr. Nikita Zakharov. https://www.iep.uni-freiburg.de/teaching</p>		

Module	The Economics of Terror		
Area of study / Profiles	► Economics and Politics		
Recommended Semester	3. - 4. semester	Mandatory/Elective	Elective
Module Coordinator	Prof. Dr. Günther Schulze	Workload	120 (180) hours
ECTS (credit points)	4 or 6 ECTS	Contact Hours (SWS)	2h Reading Course 2h Tutorial
Course Type	<ul style="list-style-type: none"> ▪ Reading Course ▪ Tutorial 	Language	English
Rotation	Irregular		
Requirements	Intermediate Econometrics, solid knowledge of micro- and macroeconomics		
Learning/ Qualification Target	<ul style="list-style-type: none"> • Understand the theoretical concepts explaining the determinants of terrorism • Understand and describe the empirical approaches for the analysis of the determinants of terror • Understand and describe the empirical approaches for the analysis of the consequences of terror • Understand and describe the empirical approaches for the analysis of the effectiveness of counterterrorism policies • Understand, describe and analyze the endogeneity problem as fundamental issue in identifying causal relationship as a prerequisite for evidence-based policy recommendations • Work with the academic literature (search, select, and summarize). • Describe, analyze and critically review the strategies to identify causal relationships in the context of empirical analyses of terror • Analyze and critically review data limitations, empirical approaches, and findings in leading empirical studies on the economics of terror, and justify their methodological choices. • Reflect about, and critically review the explanatory power, the limitations, internal and external validity of core studies in leading international journals • Suggest and evaluate extensions and methodological modifications of existing studies • Reflect critically on the impact of terror on the political process, policy outcomes, and the society (social cohesion, polarization, trust etc.) 		
Content	<ol style="list-style-type: none"> 1. Overview 2. Causes of terror, such as poverty, political regime, religious composition 3. Consequences of terror (economic, political, macro, sector and micro) 4. Counterterrorism policies 5. Conclusion 		
Examination Type	Exam 4 ECTS: 60 minutes + 30 min. reading time 6 ECTS: 90 minutes + 30 min. reading time		
Literature	Selected papers, literature list will be available at the beginning of the course		

Additional Information
& Links

<https://www.iep.uni-freiburg.de/teaching>

Module	The Political Economics of Information and Media		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Economics and Politics ▶ Digital Markets 		
Recommended semester	3. - 4. semester	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Günther Schulze	Work load	Ca. (120) 180 hours
ECTS (credit points)	4 or 6 ECTS	Contact hours (SWS)	2h Reading Course 2h Tutorial
Course type	<ul style="list-style-type: none"> ▪ Reading Course ▪ Tutorial (optional) 	Language	English
Rotation	Irregular		
Requirements	Intermediate Econometrics, solid knowledge of micro- and macroeconomics		
Learning/ qualification target	<ul style="list-style-type: none"> • Understand and explain the role of media in democracies and in autocracies • Understand and describe the empirical approaches for the analysis of the effectiveness of media (including social media) for the political process (participation, voting behavior, attitudes, polarization, social cohesion and other outcomes) • Understand and explain the concept of media persuasion and the effectiveness of information manipulation in different settings • Work with the academic literature (search, select, and summarize). • Understand, describe and analyze the endogeneity problem as fundamental issue in identifying causal relationship as a prerequisite for evidence-based policy recommendations • Describe, analyze and critically review the strategies to identify causal relationships in the context of empirical analyses of media • Analyze and critically review data limitations, empirical approaches, and findings in leading empirical studies on the economics of media, and justify their methodological choices. • Reflect about, and critically review the explanatory power, the limitations, internal and external validity of core studies in leading international journals • Suggest and evaluate extensions and methodological modifications of existing studies • Reflect critically on the role of media for the political process and policy outcomes 		
Content	<ul style="list-style-type: none"> ▪ media and voting behavior ▪ media and resignation probabilities ▪ media and corruption ▪ information and social attitudes ▪ violence against journalists and the media ▪ and other topics 		
Module title	The Political Economics of Information and Media		
Examination type	Exam <ul style="list-style-type: none"> ▪ 4 ECTS: 60 minutes + 30 min. reading time ▪ 6 ECTS: 90 minutes + 30 min. reading time 		
Literature	Selected papers, literature list will be available at the beginning of the course		

Additional information
& links

<https://www.iep.uni-freiburg.de/teaching>

Module	Topics in Econometrics and Statistical Learning		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Finance ▶ Digital Markets 		
Recommended semester	3rd semester	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Ekaterina Kazak	Work load	Approx. 200 hours
ECTS (credit points)	6 ECTS	Contact hours (SWS)	2h Lecture 2h Exercise Session
Course type	<ul style="list-style-type: none"> ▪ Lecture ▪ Exercise/Computer Session 	Language	English
Rotation	Irregular		
Requirements	Statistics, Mathematics, Econometrics		
Learning/ qualification target	This course aims at endowing students with the necessary econometric knowledge and tools for undergoing empirical research on policy evaluation and big data analysis.		
Content	<p>The course covers a series of topics in microeconometrics, policy evaluation and statistical learning. The course aims at introducing students to a range of advanced econometric methods as well as developing programming skills in R. The topics covered are:</p> <ol style="list-style-type: none"> 1. Treatment effect: identification 2. Logit/probit 3. Propensity score weighting and treatment effect estimation 4. Regression Discontinuity and Dif-in-Dif 5. Instrumental variables 6. Kernel regressions and introduction to nonparametrics 7. Dimension reduction: Lasso and Ridge regressions 8. Cross validation and bootstrap 9. Bagging and boosting 10. Trees & forests 11. Causal Machine Learning 12. Advanced classification: Support Vector Machines and Neural Networks 		
Examination type	<ul style="list-style-type: none"> • Final Exam (90 minutes) • In the exam you may use a non-programmable calculator, a hard copy of a German-English dictionary book and a one-sided A4 hand-written cheat sheet. 		
Literature	<ul style="list-style-type: none"> • Wooldridge (2010) Econometric analysis of cross section and panel data. Cambridge, Mass.: MIT Press • Bühlmann and van de Geer (2011) Statistics for High-Dimensional Data, Springer • Hastie, Tibshirani, Friedman (2009) The elements of statistical learning: data mining, inference, and prediction. Springer. • James et al (2013) An introduction to statistical learning: with applications in R. New York: Springer 		
Additional information & links	<p>https://uni-freiburg.de/econ-econometrics/teaching/</p> <p>The course material, updates and all relevant information will be available on ILIAS.</p>		

3 Seminars / Electives

Module		Finance, Climate change, and the Global Energy Transition		
Area of study / Profiles	► Finance			
Recommended semester	Second Year	Mandatory/elective	Elective	
Module coordinator	Prof. Dr. Eva Lütkebohmert-Holtz, Dr. Mirko Schäfer	Work load	180 hours (30 h attendance + 150 h self-study)	
ECTS (credit points)	6 ECTS	Contact hours (SWS)	2 SWS	
Course type	Seminar	Language	English	
Frequency taught	Irregular			
Requirements	none			
Learning objectives	<p>After successful completion of the course, the student is able to...</p> <ul style="list-style-type: none"> • Describe scenarios for climate change and for the transformation to a low-carbon economy • Discuss current global trends for the investment in low-carbon energy systems • Relate climate risks and policy risks to systemic risk in financial systems • Communicate key points from current reports and scientific articles covering the global energy transition, climate risks, and their relation to the financial system 			
Content	<ul style="list-style-type: none"> • Scenarios for climate change and for the transition to a low-carbon economy • The role of climate change and the energy transition for financial stability • The interplay between policy, investment dynamics, and technological development • Classification of sustainable investments and assessment of climate-related risks • Corporate Sustainability Reporting 			
Examination type	Written report (approx. 10 pages) and oral presentation (approx. 45 min)			
Literature	<ul style="list-style-type: none"> ▪ „A call for action – Climate change as a source of financial risk”, Network for Greening the Financial System (NGFS), 2019 ▪ „Annual Review 2018-2019“, Carbon Tracker, 2019 ▪ „World Energy Investment 2020“, International Energy Agency (IEA), 2020 ▪ “Climate change challenges for central banks and financial regulators”, E. Camiglio et al., Nature Climate Change 8, 462-468, 2018 <p>Further literature will be announced in the course.</p>			
Additional information & links	Course outlines, dates, and further information can be found on the webpage of the department: http://www.finance.uni-freiburg.de/			

Module	Main Seminar in Information Systems		
Area of study / Profiles	▶ Digital Markets		
Recommended semester	3.	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Dirk Neumann	Work load	180 hours
ECTS (credit points)	6	Contact hours (SWS)	4
Course type	Seminar	Language	English
Rotation	Winter + Summer		
Requirements	Basic skills in mathematics and programming		
Learning/ qualification target	Graduates should have the required skills for writing a Master's Thesis at our Chair		
Content	The seminar covers a common topic from information systems research. Each student then has to present a certain topic like a scientific paper in the weekly meetings. Each weekly meeting focuses on one presentation and the topic is discussed during the meeting. The seminar ends with an oral exam about the seminar's content.		
Examination type	Presentation + Participation in Discussion + Oral Exam		
Literature	Hastie, T., Tibshirani, R., Friedman, J. H., & Friedman, J. H. (2009). <i>The elements of statistical learning: data mining, inference, and prediction</i> (Vol. 2, pp. 1-758). New York: springer.		
Additional information & links	https://www.is.uni-freiburg.de/lehre		

Module	Selected Topics in Industrial Organization and Competition Economics		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Economics and Politics ▶ Finance ▶ Digital Markets 		
Recommended Semester	3 rd or 4 th semester	Mandatory/Elective	Elective
Module Coordinator	Prof. Dr. Germain Gaudin	Workload	180 hours
ECTS (credit points)	6 ECTS	Contact Hours (SWS)	2h
Course Type	Seminar	Language	English
Rotation	Irregularly offered		
Requirements	Very good working knowledge of microeconomics (ideally both theoretical and empirical). This seminar is recommended to students who have followed the courses Advanced Microeconomics II and Industrial Organization.		
Learning/ Qualification Target	During the seminar, a specific topic in industrial organization and competition economics will be covered in depth, such that students gain a thorough understanding of this topic. They will learn how to approach a specialized field of study and how to write and present a seminar paper. These skills are particularly helpful for writing a Master thesis.		
Content	Specific seminar topics change every semester in order to adapt the seminar to the most recent issues in competition policy and industrial organization. Particular attention will generally be devoted to topics related to competition in major digital markets.		
Examination Type	<ul style="list-style-type: none"> ▪ Seminar paper ▪ Presentation ▪ Participation in the general discussion 		
Literature	A selected literature is provided every semester, with every specific topic.		
Additional Information & Links	Seminar topics change every semester. Information about each semester's seminar topic can be found on the homepage of Prof. Gaudin's chair.		
	<p>Due to the limited number of seats available, students willing to participate in the seminar need to register in advance.</p> <p>Relevant information is available on the homepage of Prof. Gaudin's chair: https://www.competition.uni-freiburg.de/</p>		

Module	Selected Topics in Institutional Economics and International Economic Policy (Seminar)		
Area of study / Profiles	▶ Economics and Politics		
Recommended Semester	1. – 4. semester	Mandatory/Elective	Elective
Module Coordinator	Prof. Dr. Tim Krieger	Workload	Ca. 180 hours
ECTS (credit points)	6 ECTS	Contact Hours (SWS)	2h seminar
Course Type	Seminar	Language	English
Rotation	Irregular		
Requirements	Very good working knowledge of theoretical and empirical economics		
Learning/ Qualification Target	During the seminar a specific topic in institutional economics and/ or international economic policy will be covered in depth, so students gain a thorough understanding of this topic. At the same time they learn how to approach a specialized field of study and how to write and present a seminar paper. These skills are particularly helpful for eventually writing the Master's thesis.		
Content	Seminar topics change every semester.		
Examination Type	<ul style="list-style-type: none"> ▪ Seminar paper ▪ Presentation ▪ Participation in the general discussion. 		
Literature	Selected readings which change every semester.		
Additional Information & Links	Seminar topics change every semester. There may be other lecturers in addition to or instead of Prof. Krieger. Further information (including each semester's seminar topic) can be found on the homepage of Prof. Krieger's chair: http://www.wguth.uni-freiburg.de/		

Module	Selected Topics in International and Development Economics		
Area of study / Profiles	► Economics and Politics		
Recommended semester	3. – 4. semester	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Günther Schulze	Work load	Ca. 180 hours
ECTS (credit points)	4 or 6 ECTS	Contact hours (SWS)	2h seminar
Course type	Seminar	Language	English
Rotation	Irregular		
Requirements	Good command of intermediate econometrics. The participation in all sessions of the seminar is required,		
Learning/ qualification target	<p>The seminars cover changing topics in the field of international and development economics in depth. Students are introduced to the relevant literature and learn to understand how economic theory and econometric methods can be applied to the context of the respective seminar. Learning objectives include</p> <ul style="list-style-type: none"> • Knowledge of the concrete seminar topic • Work with the academic literature (search, select, and summarize). • Understand, describe and analyze the endogeneity problem as fundamental issue in identifying causal relationship as a prerequisite for evidence-based policy recommendations • Describe, analyze and critically review the strategies to identify causal relationships in the f empirical analyses of the topic at hand • Analyze and critically review data limitations, empirical approaches, and findings in leading empirical studies on the seminar topic, and justify their methodological choices. • Reflect about, and critically review the explanatory power, the limitations, internal and external validity of core studies in leading international journals • Suggest and evaluate extensions and methodological modifications of existing studies • Present the research findings in an accessible, convincing way that accounts for the complexity of the problem at hand <p>Write a seminar paper that is structured, problem-oriented and methodologically sound, and that selects the main issues for the problem at hand.</p>		
Content	Changing topics, e.g. political economy, corruption...		
Examination type	<ul style="list-style-type: none"> ▪ Seminar paper ▪ Presentation ▪ Participation in the general discussion. ▪ For 6 ECTS: discussion of the presentation held by another student 		
Literature	Selected papers, literature list will be available at a first meeting.		
Additional information & links	https://www.iep.uni-freiburg.de/teaching		

Modul	Seminar in Empirical Finance		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Finance ▶ Information Systems and Network Economics ▶ Digital Markets 		
Recommended semester	3 rd or 4 th semester	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Roxana Halbleib	Workload	Approx. 180 hours
ECTS (credit points)	6 ECTS	Contact hours (SWS)	2 SWS
Course type	Seminar	Language	English
Rotation	Every semester		
Requirements	<ul style="list-style-type: none"> • Successful completion of the classes “Intermediate Econometrics” • Good knowledge in a programming language (R, Python, Matlab, etc.) • Parallel enrollment or the successful completion of “Financial Time Series Analysis” or any other econometrics related class (On demand, we also could provide the videos of the lectures “Financial Econometrics”, “Time Series Analysis” and “Advanced Topics in Econometrics” from the COVID time period.) <p>It is highly recommended and desired that two students work on a topic jointly.</p>		
Learning/qualification target	The goal of this seminar is to acquaint master students with modern econometric methods and their applications to research questions related to financial econometrics, quantitative risk management, high-dimensional and high-frequency finance as well as machine learning in empirical finance.		
Content	<p>The seminar addresses mainly topics in applied financial econometrics. The topics vary each year.</p> <p>On each topic, students (single or in a group of two) have to write a term paper, in which they apply a novel and/or advanced econometric method to solve real economic problems by undergoing a complex empirical analysis on real (usually big) financial data and by self-programming the codes for the empirical study.</p> <p>The topics can be individually adapted to allow for being pursued further in a subsequent master thesis.</p>		
Examination type	Term paper and classroom presentation of the term paper		
Literature	The list of literature is provided for each topic during the first meeting at the beginning of the semester.		
Additional information & links	<p>A preliminary registration is required!</p> <p>For further information about the seminar, please visit the homepage of the chair: https://uni-freiburg.de/econ-econometrics/teaching/</p>		

Modul		Social Contract Laboratory – SoCoLab: Basic Income and Social Justice	
Area of study / Profiles	► Finance		
Recommended Semester	1. - 4. semester	Mandatory/Elective	Elective
Module Coordinator	Prof. Dr. Bernhard Neumärker	Workload	Ca. 180 hours
ECTS (credit points)	6 ECTS	Contact hours (SWS)	Blockcourse (further informations are available on the homepage)
Course Type	Blockcourse	Language	English
Rotation	Irregular		
Requirements	no special requirements		
Learning/ Qualification Target	<p>Students learn to apply central economic theories to the social policy topic of basic income. They independently develop both a presentation and a short written paper on a given topic. The students work cooperatively in groups. They practice giving and receiving constructive feedback.</p>		
Content	<p>SoCoLab seminar, winner of a University teaching award 2012, deviates from a usual seminar setting. The students after reading the necessary papers and finish the required assignments will be welcomed during class to participate and discuss the elements of the theories and their ideas with Prof. Neumärker and his co-workers. The seminar consists of an introduction, 2 blocked meetings, a day of experiments with the participants, and a concluding session for the team experiments. In the first sessions (Part I), the theoretical foundations and political problems are laid, and after the introduction to experiment settings (Part II) follow the presentations and critical discussion on design and conduct of team experiments (Part III). The participation in all the classes is obligatory in order to achieve maximum participation and understanding of the subjects. After the classes and the experiments for seminar participants are over, teams are given a sufficient amount of time to develop an experiment on the topic. In the team experiments, the participants are expected to critically reflect on one of the issues tackled in the seminar. The experiment design formalities and more specific information on the content will be provided to all participants.</p> <p>Content:</p> <ul style="list-style-type: none"> ▪ Introductory Session ▪ Learning sessions: <ul style="list-style-type: none"> - 3x2 Hour Sessions on Social Contract, Basic Income Theories and Economic Problems of Inequality and Social Immobility - 3x2 Hour Sessions on Experimental Logic and Design and its Application to Social Contracting on Basic Income and Public Inequality Regulation - 2x3 Hour Experimental Sessions - 2x2 Hour Feedback Sessions on Critical Discussion of the Theoretical Underpinnings and Experimental Outcomes 		
Examination Type	The overall grade is the weighted as a sum of all three elements of the seminar with the following weights:		

	<ul style="list-style-type: none"> ▪ Team Experiment and Paper/Report on a Experiment: 60%, ▪ Assignments: 20%, ▪ Class Participation: 20%. <p>The teams will be built, at the latest, after the “Experimental Sessions for Participants”.</p>
Literature	Are provided in the Introductory session
Additional Information & Links	https://gwp.uni-freiburg.de/

Module	Special Topics in Basic Income Studies		
Area of study / Profiles	► Economics and Politics		
Recommended semester	1 - 4 Semester	Mandatory/elective	Elective
Module coordinator	Alternating (Professor Neumärker – Götz Werner Chair)	Workload	180 – 240 hours
ECTS (credit points)	6	Contact hours (SWS)	Block Event
Course type	Seminar (Block)	Language	English
Rotation	Irregular		
Requirements	There are no formal requirements, but a background in economics, political science or public policy is beneficial.		
Learning/ qualification target	Students learn to apply central economic theories to the social policy topic of basic income. They independently develop both a presentation and a short written paper on a given topic. They practice giving and receiving constructive feedback.		
Content	This module, facilitated each semester by an alternating academic, aims to enhance students' understanding of key concepts, controversies and emerging trends in basic income studies. Tailored to each academic's expertise and current research, this seminar will allow students to gain valuable insights and perspectives from leaders in the field. More information will be published on the GWP Website (see below).		
Examination type	<ul style="list-style-type: none"> ▪ Presentation ▪ Seminar paper ▪ Active participation 		
Literature	Will be announced in the seminar.		
Additional information & links	https://gwp.uni-freiburg.de/		

Module	Topics in Behavioral Economics		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Economics and Politics ▶ Finance ▶ Digital Markets 		
Recommended semester	1st – 4th semester	Mandatory/elective	Elective
Module coordinator	Prof. Feld	Work load	Appr. 180 hours
ECTS (credit points)	6	Contact hours (SWS)	2
Course type	Seminar	Language	English
Rotation	Annual		
Requirements	Foundations in Intermediate Econometrics		
Learning/ qualification target	In the course, students are expected to work independently on a current topic in behavioral economics and related fields. Students are required to present a previously selected topic in a seminar paper limited to 15 pages. In addition, the results of the work are to be presented and discussed in the seminar in the form of a self-prepared presentation. Moreover, students are expected to actively participate in the discussion of their peers' work.		
Content	The seminar will cover topics in the field of behavioral economics as well as public economics from a behavioral and empirical perspective.		
Examination type	<ul style="list-style-type: none"> ▪ Seminar paper (15 pages) ▪ Presentation 		
Literature	A literature list will be provided.		
Additional information & links	Attendance is limited. Application is handled by the Chair of Prof. Feld. Kindly see https://www.ordo.uni-freiburg.de/de/Lehre for more information.		

Modul	Topics in Macroeconomics I		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Economics and Politics ▶ Finance ▶ Digital Markets 		
Recommended semester	2. – 4. semester	Mandatory/Elective	Elective
Module coordinator	Prof. Dr. Marten Hillebrand	Work load	120 hours
ECTS (credit points)	6 ECTS	Contact hours (SWS)	3 hr. Seminar
Course type	Seminar (Topics Course)	Language	English
Rotation	Summer term		
Requirements	Advanced Macroeconomics I and/or II		
Learning/Qualification Target	<ul style="list-style-type: none"> ▪ Familiarization with topics and methods in macroeconomic research ▪ Practice macroeconomic reasoning and scientific writing. 		
Content	<ul style="list-style-type: none"> ▪ Macroeconomic models (e.g. on economic growth, asset pricing, etc.) ▪ Theoretical and computational methods in macroeconomics ▪ Discussion and presentation of published articles 		
Examination Type	Presentations and seminar papers, participation in in-class discussions.		
Literature	A changing selection of articles as announced in the syllabus.		
Additional Information & Links	Further information can be accessed on the chair's website: http://www.macro.uni-freiburg.de/news/home		

Modul	Topics in Macroeconomics II		
Area of study / Profiles	<ul style="list-style-type: none"> ▶ Economics and Politics ▶ Finance ▶ Digital Markets 		
Recommended semester	2. – 4. semester	Mandatory/Elective	Elective
Module coordinator	Prof. Dr. Marten Hillebrand	Work load	120 hours
ECTS (credit points)	6 ECTS	Contact hours (SWS)	3 hr. Seminar
Course type	Seminar (Topics Course)	Language	English
Rotation	Winter term		
Requirements	Advanced Macroeconomics I and/or II		
Learning/Qualification Target	<ul style="list-style-type: none"> ▪ Familiarization with topics and methods in macroeconomic research ▪ Practice macroeconomic reasoning and scientific writing. 		
Content	<ul style="list-style-type: none"> ▪ Macroeconomic models (e.g. on monetary and fiscal policy, etc.) ▪ Theoretical and computational methods in macroeconomics ▪ Discussion and presentation of published articles 		
Examination Type	Presentations and seminar papers, participation in in-class discussions.		
Literature	A changing selection of articles as announced in the syllabus.		
Additional Information & Links	Further information can be accessed on the chair's website: http://www.macro.uni-freiburg.de/news/home		

5. Exchange and Studying Abroad

Study abroad is a great opportunity for enrichment and personal development. Studying abroad is becoming more and more important for opportunities on the job market. The international exchange programs offered by the faculty and the University of Freiburg offer many opportunities to spend part of your studies in Europe or other areas in the world.

The recommended period for a semester abroad or year depends on the individual study situation. Typically, study abroad takes place in the third semester of the course studies. The preparation and planning period is about 10-12 months (gathering information, planning, making decisions, adhering to application deadlines, etc.).

With the Foreign Office of the Department of Economics, the faculty has an advisor and coordination office for study abroad. With over 30 partners in Europe, the US and Brazil, there is a wide range of exchanges available to students. The International Office is the primary contact for all questions and inquiries. The International Office also has communication and contracts with partner universities worldwide. Further information about exchange programs, current information, events, contact details, are available at <http://portal.uni-freiburg.de/vwl-international>.

For more information: <https://portal.uni-freiburg.de/vwl-international>

EUCOR exchange program:

Additionally, all students of the Master of Economics Program can enjoy of the EUCOR program, by which they can take any course at the Universities of three different countries:

- Germany [Karlsruher Institut für Technologie \(KIT\)](#),
- Switzerland: [Universität Basel](#),
- France: [Université de Haute-Alsace](#), [Université de Strasbourg](#)

For more information about the EUCOR program: http://www.studium.uni-freiburg.de/en/counseling/exchange-programs-and-studying-abroad/eucor?set_language=en

Partner Universities and exchange places

Country	Partner university	Amount of places x duration	M.Sc.
Belgium	Universität Gent	4 x 10 months	X
	Universität Antwerpen	2 x 5 months	X
Bulgaria	University of Economics Varna	3 x 6 months	X
Finland	Hanken School of Economics (1 place at Campus Helsinki, 1 place at Campus Vasa)	2 x 6 months	X
France	Université Jean Moulin (Lyon III)	2 x 10 months	X
	Institut Catholique de Paris	2 x 10 months	X
	Université des Antilles et de la Guyane	2 x 5 months	X
	Université Grenoble Alpes	2 x 10 months	X
	Audencia Business School	2 x 10 months	X
Greece	Ioannina University	2 x 10 months	X
United Kingdom	University of Dundee	2 x 9 months	
Italy	Università degli Studi di Roma	2 x 10 months	X
	Università degli Studi di Torino	2 x 5 months	X
	Università di Siena	3 x 6 months	X
	Università Cattolica del Sacro Cuore (Mailand)	2 x 10 months	X
	Università di Roma (Sapienza)	2 x 10 months	X
	Università di Reggio Calabria	2 x 10 months	X
Macedonia	South East European University	2 x 10 months	X
Norway	NMBU Ås	2 x 10 months	X
	Universitetet i Bergen	2 x 10 months	
Poland	Szkoła Główna Handlowa, Warszawa	2 x 10 months	X
Portugal	Universidade de Lisboa	3 x 6 months	X
Romania	Universitatea Iasi	2 x 5 months	X
Sweden	Universität Linköping	3 x 10 months	

	Dalarna University	2 x 5 months	X
Switzerland	Université de Genève	2 x 9 months	X
	Università della Svizzera Italiana, Lugano	2 x 5 months	X
	Universität Luzern	2 x 5 months	
Spain	Universidad de Almería	2 x 10 months	X
	Universitat Internacional, Barcelona	2 x 5 months	
	Universidad de Cádiz*	5 x 9 months for BSc and 4x5 for MSc	
	Universidad de Granada	2 x 5 months	X
	Universidad Carlos III de Madrid	3 x 5 months (and 2 x 9)	
	Universidad Autónoma de Madrid	2 x 5 months	
Universidad de Sevilla*	2 x 10 months		
Turkey	Middle East Technical University Ankara	3 x 5 months	X
	Dokuz Eylül University, Izmir	2 x 5 months	
	Piri Reis University Istanbul	2 x 6 months	X
Hungary	Andrássy Universität Budapest	2 x 10 months	X
	Universität Sopron	2 x 5 months	X

7. Advisory Services

For further information regarding the M.Sc. Economics Program you can visit our faculty homepage, or you can send us an email.

MEP Homepage:

<http://master.econ.uni-freiburg.de/>

Chairs and Institutes:

https://www.wirtschaftswissenschaften.uni-freiburg.de/en/chairs-and-priorities?set_language=en

Examination Office:

https://www.wirtschaftswissenschaften.uni-freiburg.de/en/examination-office?set_language=en

International Office:

http://www.international.uni-freiburg.de/en?set_language=en

Student Service Center

<https://uni-freiburg.de/en/studies/during-your-studies/>

Student Service Center - International Admissions and Services

<https://uni-freiburg.de/en/studies/applying/international-applicants/>

Student Service Center - Career Services

<https://uni-freiburg.de/en/studies/advising/>

SWFr: Studierendenwerk Freiburg

<https://www.swfr.de/en/>

Module	European Economic and Fiscal Policy		
Area of study/Profile			
Recommended semester	1.-4.	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Dr. Lars P. Feld	Work load	Ca. 120 hours
ECTS (credit points)	4 ECTS	Contact hours (SWS)	2h Lecture
Course type	Lecture	Language	English
Rotation	Irregular		
Requirements	No special requirements		
Learning/ qualification target	<p>By the end of the course, students are able to:</p> <ul style="list-style-type: none"> • Students describe the institutions and legal system of the European Union and explain their history. • They analyze key areas of financial and economic policy, such as the single market, monetary policy, and the EU budget. • They evaluate current challenges and future prospects for European integration against the backdrop of economic and political contexts. 		
Content	<p>This course covers the fundamentals of European integration, including the history, objectives, and reasons behind the European Union, its institutions, and its legal system. Building on this foundation, the course addresses key topics in European economic and fiscal policy. These include the EU single market, trade policy, competitiveness, financial and monetary policy, climate policy, agricultural and migration policy, and current challenges such as the Covid fund and defense policy. In the area of fiscal and tax policy, pension policy, and the EU budget are analyzed in particular. The aim of the module is to provide a sound understanding of the instruments, processes, actors, and future prospects of European economic and fiscal policy.</p>		
Examination type	PL (written Exam) <ul style="list-style-type: none"> • 4 ECTS: 60 min. 		
Literature	The literature will be announced during the lecture.		
Additional information & links	Important information and last-minute announcements will also be posted on the department's website: https://uni-freiburg.de/wiwi-ordo/		

Module	Corporate Finance/Financial Management		
Area of study	► M.Sc. Economics, Profile: Finance		
Recommended semester	1 st Semester	Mandatory/elective	Elective
1st Semester	Dr. Saswat Patra	Work load	120 hours
ECTS (credit points)	4 ECTS	Contact hours (SWS)	2 SWS Lecture
Course type	Lecture	Language	English
Rotation	One-Time		
Requirements	None		
Learning/ qualification target	<p>After successful completion of this seminar, students will be able to</p> <ul style="list-style-type: none"> - Understand the concept of time value of money and applications in capital budgeting; - Appreciate the features and valuation of marketable securities, including stocks and bonds; - Evaluate the relationship between risk and return in financial investments; - Analyze the capital structure of a firm and its impact on the valuation 		
Content	<p>Corporate Finance is an introductory course that presents the basic concepts and analytical methods applied in the area of Finance, relevant in the corporate world. In this course, the students shall learn about the concepts supporting financial decision making in businesses.</p>		
Examination type	Take Home Exercise involving a case study		
Literature	<ul style="list-style-type: none"> • <i>“Principles of Corporate Finance”</i>, Richard Brealey, Stewart Myers, Franklin Allen and Alex Edmans, 14th Edition, McGraw – Hill Publishing Company Limited. • <i>“Corporate Finance: A focussed Approach”</i>, Michael C. Ehrhardt, Eugene F. Brigham, 8th Edition, Cengage Publications 		
Additional information & links	https://www.finance.uni-freiburg.de/studium-und-lehre-en/studium-und-lehre-en?set_language=en		

Module	Financial Analytics		
Area of study	► M.Sc. Economics, Profile: Finance		
Recommended semester	1 st Semester	Mandatory/elective	Elective
1st Semester	Dr. Saswat Patra	Work load	120 hours
ECTS (credit points)	4 ECTS	Contact hours (SWS)	2 SWS Lecture
Course type	Lecture	Language	English
Rotation	One-Time		
Requirements	Basic Statistics and/or Econometrics courses		
Learning/ qualification target	<p>After successful completion of this seminar, students will be able to</p> <ul style="list-style-type: none"> - Understand machine learning algorithms in the context of financial world. - Understand methods in financial portfolio modelling and market risk analytics. - Evaluate data analytics skills using computer software tools to solve real-world problems in the financial service sector and report the insights for decision making. - Apply working knowledge of statistical and advanced methods in data science to convert financial data into meaningful and actionable insights. 		
Content	<p>This course introduces the fundamental process of statistical analytics and data science for finance to students interested in FinTech and financial modelling & forecasting. The course focuses on developing critical computational, statistical, and analytical skills essential for professionals conducting data-driven financial analytics in the FinTech area</p>		
Examination type	Take Home Exercise involving real life problem with data.		
Literature	<ul style="list-style-type: none"> • Sinem Derindere Köseoğlu (Ed.) (2022). Financial Data Analytics: Theory and Applications, Springer Publishing, Switzerland. • Khang, Alex, Gujrati, Rashmi, Uygun, Hayri, Tailor, R. K. and Gaur Sanjaya (Eds.) (2025). Data- Driven Modelling and Predictive Analytics in Business and Finance: Concepts, Designs, Technologies, and Applications, CRC Press 		
Additional information & links	https://www.finance.uni-freiburg.de/studium-und-lehre-en/studium-und-lehre-en?set_language=en		

Seminars

Module	Advanced Topics in Finance (Seminar)		
Area of study	► M.Sc. Economics, Profile: Finance		
Recommended semester	Current M.Sc. and PhD students in Quantitative Finance	Mandatory/elective	Elective
Module coordinator	Prof. Dr. Eva Lütkebohmert-Holtz	Work load	120 hours
ECTS (credit points)	4 ECTS	Contact hours (SWS)	2
Course type	Seminar	Language	English
Rotation	Every semester		
Requirements	<p>Participants are expected to be familiar with general concepts in quantitative finance (e.g. through successful participation in the courses Principles of Finance and Futures and Options). The seminar is designed for students affiliated with the Chair of Quantitative finance and who are in the process of preparing their Master's thesis.</p>		
Learning/Qualification Target	<p>After successful completion of this seminar, students will be able to</p> <ul style="list-style-type: none"> - Formulate and present a research project - Communicate research progress effectively - Critically assess quantitative research methods - Identify and address research challenges - Incorporate constructive feedback - Engage in scholarly discussion 		
Content	<p>This seminar is designed for Master's students affiliated with the Chair of Quantitative Finance who are in the process of preparing their Master's theses. It serves as a structured forum for presenting and discussing ongoing research at different stages of thesis development. Students present their research ideas, methodological approaches, preliminary results, and intermediate progress, and receive constructive feedback.</p> <p>The seminar emphasizes the identification and resolution of conceptual, methodological, and practical challenges arising during the research process. Through regular presentations and discussions, students refine their research questions, improve the rigor of their analytical approaches, and develop the ability to critically assess both their own work and that of others.</p>		
Examination type	Seminar presentation		
Literature	Will be discussed individually		
Additional Information & links	<p>Presentations are based on individual invitation only.</p> <p>For further information see http://www.uni-freiburg.de/econ-finance</p> <p>www.finance.uni-freiburg.de</p>		

Module	Introduction to Credit Risk and Applications in Python		
Area of study	► M.Sc. Economics, Profile: Finance		
Recommended semester	► Second Year		
Module coordinator	Prof. Dr. Eva Lütkebohmert-Holtz	Mandatory/elective	Elective
ECTS (credit points)	6 ECTS	Work load	180 hours (30 h attendance + 150 h self-study)
Course type	Seminar	Contact hours (SWS)	2
Rotation	Irregular	Language	English
Requirements	<ul style="list-style-type: none"> • Principles of Finance • Futures and Options • Python Course 		
Learning/ qualification target	<p>By the end of the course, students will be able to</p> <ul style="list-style-type: none"> • Understand core concepts of credit risk management • Apply Python for credit risk analysis • Build and analyse credit risk factor models • Estimate and calibrate model parameters • Implement simulation techniques • Evaluate model assumptions and limitations 		
Content	<p>This course offers an applied introduction to credit risk management with a strong emphasis on practical implementation using Python. Students will develop core data processing and analytical skills in Python and learn how to model and analyze credit risk using factor models. Key topics include parameter estimation, model calibration, and simulation-based analysis. Through hands-on applications and real-world examples, the course covers essential applications such as credit risk quantification, stress testing, simulation techniques, and data analysis in credit risk management.</p>		
Examination type	Seminar presentation and written paper		
Literature	<p>Bielecki, T., & Rutkowski, M. (2002). <i>Credit Risk: Modeling, Valuation and Hedging</i>. Springer.</p> <p>Bluhm, C., Overbeck, L., & Wagner, C. (2010). <i>Introduction to Credit Risk Modeling</i> (2nd ed.). Chaman & Hall/CRC.</p> <p>Frey, R., McNeil, A. J., & Embrechts, P. (2015) <i>Quantitative Risk Management - Concepts, Techniques and Tools</i> (revised edition)</p> <p>Gordy (1998), A Comparative Anatomy of Credit Risk Models</p> <p>Gundlach, M., & Lehrbass, F. (2003). <i>CreditRisk+ in the Banking Industry</i>. Springer.</p> <p>Lando, D. (2004) <i>Credit Risk Modeling</i>. Princeton University Press.</p> <p>Lütkebohmert, E. (2009) <i>Concentration Risk in Credit Portfolios</i>. Springer.</p> <p>Perraudin, W. (2004) <i>Structured Credit Products: Pricing, Rating, Risk Management and Basel II</i>. Risk Books.</p>		

	Pykhtin, M. (2004). Multi-factor Adjustment. <i>Risk Magazine</i> .
Additional information & links	Course outlines, dates, and further information can be found on the webpage of the department: https://uni-freiburg.de/econ-finance/