FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG

SCHOOL OF BUSINESS
AND ECONOMICS

Master‘s degree program

Master in Economics

Module handbook—summer semester 2017

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MODULE HANDBOOK

Master of Science in Economics

Start: winter semester 2015/16

Stand: 01.04.2017

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Economics Study Plan			Distribution of workload per semester			
			1	2	3	4
	Type	ECTS	*ECTS*	*ECTS*	*ECTS*	*ECTS*
1st semester: compulsory subjects – 6 compulsory modules						
Mathematics for Economists	L	5	*5*			
Microeconomics	L	5	*5*			
Game Theory	L	5	*5*			
Macroeconomics: Business Cycles	L	5	*5*			
Macroeconomics: Economic Growth	L	5	*5*			
Applied Econometrics	L	5	*5*			
2nd and 3rd semester: elective subjects – choice of 10 economic elective modules + 2 free elective modules						
Elective compulsory subjects: 10 modules worth 5 ECTS credits each, including at least one economics seminar (5 ECTS) - Module group: Labor Economics - Module group: Macroeconomics and Finance - Module group: Public Economics - Module group: Energy Markets - Module group: Health Economics		50		*25*	*25*	
Free elective modules: 2 modules worth 5 ECTS credits each		10		*5*	*5*	
4th semester: Master's thesis						
Master's thesis		25				*25*
Master's thesis seminar		5				*5*
ECTS credits		**120**	***30***	***30***	***30***	***30***

Specialisations

Students can choose to study **specialisations**, in which a minimum of 15 ECTS are to be completed. If a module is allocated to more than one specialisation students may decide themselves which specialisation it is to be allocated to. To avoid confusion, please note that *specialisations* and *module groups* are different concepts!
The five available specialisations and their respective modules are the following:

	Term	Language	**Module group***
Specialisation: *Labor Economics*			
Public economics in theory and practice (4610)	S	EN	*Public*
Behavioral economics (3281)	S	EN	*Public*
Labor and personnel economics (2900)	S	EN	*Labor*
Mikroökonometrie (3104)	S	DE	*Labor*
Ökonomie der Sozialpolitik (3081)	S	DE	*Public*
Personnel economics (3071)	S	EN	*Labor*
Seminar behavioral economics 1 (2930)	S/W	EN	*Public*
Spatial economics (5960)	S	EN	*Public*
Taxation and labor supply (6410)	S	EN	*Public*
Empirische Arbeitsmarktforschung (3370)	W	DE	*Labor*
Labor market policy (2910)	W	EN	*Labor*
Labor markets: A macroeconomic perspective (3342)	W	EN	*Macro*
Literaturseminar zu aktuellen Fragen der Arbeitsmarktökonomie (2390)	W	DE	*Labor*
Panel- und Evaluationsverfahren (3054)	W	DE	*Public*
Seminar behavioral economics 2 (2940)	W	EN	*Public*
Specialisation: *Macroeconomics and Finance*			
Public economics in theory and practice (4610)	S	EN	*Public*
Applications in macroeconomics and financial economics (4620)	S	EN	*Macro*
Advanced data analysis (3322)	S	DE	*Macro*
Asset liability management (6530)	S	DE	*Macro*
Financial engineering und structured finance (6270)	S	DE	*Macro*
Lebensversicherung (6540)	S	DE	*Macro*
Macroeconomic methods: Applications to monetary policy (2640)	S	EN	*Macro*
Mikroökonometrie (3104)	S	DE	*Labor*
Multivariate time series analysis (3312)	S	EN	*Macro*
Banking supervision: Bank rating, stress testing, financial stability (2560)	W	EN	*Macro*
Taxation of capital Income (3984)	W	EN	*Public*
Finanz- und Bankmanagement (3770)	W	DE	*Macro*
Fundamental statistical theory of econometrics (3261)	W	DE	*Macro*
International finance (2290)	W	EN	*Macro*

Labor markets: A macroeconomic perspective (3342)	W	EN	*Macro*
Panel- und Evaluationsverfahren (3054)	W	DE	*Public*

	Term	Language	**Module group***
Specialisation: *Public Economics*			
Public economics in theory and practice (4610)	S	EN	*Public*
Behavioral economics (3281)	S	EN	*Public*
Ökonomie der Sozialpolitik (3081)	S	DE	*Public*
Seminar behavioral economics 1 (2930)	S/W	EN	*Public*
Seminar public economics 1 (2950)	S	EN	*Public*
Spatial economics (5960)	S	EN	*Public*
Taxation and labor supply (6410)	S	EN	*Public*
Panel- und Evaluationsverfahren (3054)	W	DE	*Public*
Seminar behavioral economics 2 (2940)	W	EN	*Public*
Seminar public economics 2 (2960)	W	EN	*Public*
Taxation of capital income (3984)	W	EN	*Public*
Specialisation: *Energy Markets*			
Advanced industrial organization (8050)	S	EN	*Energy*
Behavioral economics (3281)	S	EN	*Public*
Seminar energy markets (2990)	S	DE/EN	*Energy*
Linear optimization (2971)	W	DE	*Energy*
Combinatorial optimization (2972)	W	DE	*Energy*
Methods and applications of mathematical optimization (2980)	W	DE	*Energy*
Quantitative methods in energy market modelling (2591)	W	EN	*Energy*
Seminar behavioral economics 2 (2940)	W	EN	*Public*
Seminar Optimierung in Energiemärkten (4340)	W	DE	*Energy*
Mathematical optimization for communications & signal processing (3180)	W	EN	*Energy*
Specialisation: *Health Economics*			
Public economics in theory and practice (4610)	S	EN	*Public*
Behavioral economics (3281)	S	EN	*Public*
Ökonomie der Sozialpolitik (3081)	S	DE	*Public*
Seminar behavioral economics 1 (2930)	S/W	EN	*Public*
The economics of health insurance (6792)	S	EN	*Health*
The supply of medical services (2153)	W	DE	*Health*
Panel- und Evaluationsverfahren (3054)	W	DE	*Public*
Applied empirical health economics (2162)	W	DE	*Health*
Seminar behavioral economics 2 (2940)	W	EN	*Public*
Miscellaneous (Modules that do not belong to any specialisation)			
Economic internship (6441)	W/S		*Public*
Exchange module 1 (5693)	W/S		*Public*
Exchange module 2 (5694)	W/S		*Public*

Nichtparametrische statistische Verfahren (5200)	S	DE	*Macro*

***Module groups** (Modulgruppen) as defined in the examination regulations and study plan: Labor (Labor Economics), Public (Public Economics), Macro (Macroeconomics and Finance), Energy (Energy Markets), and Health (Health Economics).

Compulsory Subjects

1	**Module name** MSE-2890	**Applied econometrics**	**5 ECTS**
2	Courses/lectures	Lecture & exercise: Applied econometrics	5 ECTS
3	Lecturers	Prof. Tauchmann / Simon Reif	

4	**Module coordinator**	Prof. Tauchmann
5	**Contents**	The linear Regression model based on a firm theoretical basis and using rigorous notation; endogeneity and instrumental variables estimation; the generalized regression model and heteroscedasticity, the basics of maximum likelihood estimation; using STATA® for applied econometric work
6	**Learning objectives and skills**	The students deepen their knowledge of linear and non-linear estimation techniques as well as their knowledge of hypotheses testing; students learn how to apply their methodical knowledge to empirical work using the software STATA® and how to interpret estimation results.
7	**Prerequisites**	Basic knowledge of statistics and econometrics as covered by the optional preparatory course (Brückenkurs).
8	**Integration in curriculum**	1. semester
9	**Module compatibility**	Master Economics: Compulsory subjects
10	**Method of examination**	90-minute written examination (100%). Students can improve their grade through a written assignment based on an independent econometric analysis using STATA®, which then accounts for 20% of the grade.
11	**Grading procedure**	Written examination (100%)
12	**Module frequency**	Annually in the winter term
13	**Workload**	Attendance: 60 h Independent study: 90 h
14	**Module duration**	Weekly 90 min. lecture and 90 min. exercise class over the lecture period (1 semester)
15	**Teaching and examination language**	English
16	**Recommended reading**	Greene, W. H. (2012): Econometric Analysis, Pearson, 7th ed.

Compulsory Subjects

1	**Module name** MSE-3201	**Game theory**	**5 ECTS**
2	Courses/lectures	Lecture: Advanced game theory (2 credit hours) Exercise: Advanced game theory (2 credit hours)	5 ECTS
3	Lecturers	Prof. Grimm and assistants	
4	**Module coordinator**	Prof. Grimm	
5	**Contents**	Game Theory analyses the decision-making behavior of rational agents in decision-making situations, in which several actors are involved. Unlike Decision Theory, Game Theory describes a situation in which the success of the individuals is not only depending on their own behavior, but on the actions of the other participants as well. The course will deepen and extend the basic knowledge of Game Theory acquired in the Bachelor studies. The course shows the applications of basic game theoretical concepts (Nash equilibrium, subgame perfect equilibrium) to more complicated economic applications. In addition, it introduces more advanced concepts, such as the analysis of the games with incomplete information both in simultaneous and sequential move games. We discuss different equilibrium concepts and their various refinements in the context of these games.	
6	**Learning objectives and skills**	The students learn a more formal representation of the basic game theoretical concepts, can differentiate between different types of games and their appropriate solution concepts. They learn the applications of these concepts to advanced economic problems. In addition, they are introduced to the games of incomplete information, learn the basic solution concepts and their more advanced refinements. The students should be able to formally approach real-world multi-person decision problems, model the behavior of their participants and give predictions on these strategic situations based on the equilibrium concept studied on the course. They also acquire analytical tools and an understanding of mathematical proofs.	
7	**Prerequisites**	Bachelor´s degree in economics or a comparable discipline	
8	**Integration in curriculum**	1. semester	
9	**Module compatibility**	Master Economics: Compulsory subjects Master Sozialökonomik: Vertiefungsbereich Master Arbeitsmarkt und Personal: Wahlbereich	
10	**Method of examination**	90 minute written examination (80%), homework assignments (20%)	
11	**Grading procedure**	Written examination (80%) written assignments (20%)	
12	**Module frequency**	Annually in the winter term	
13	**Workload**	Presence time: 60 h Independent study: 90 h	
14	**Module duration**	1 semester	
15	**Teaching and**	English	

	examination language	
16	**Recommended reading**	Fudenberg, D. and Tirole, J. (2007), Game Theory, Cambridge, MIT Press. Further Readings: Krishna, V. (2002), Auction Theory, Academic Press. Osborne, M. and A. Rubenstein (1994), A Course in Game Theory, Cambridge, MIT Press.

Compulsory Subjects

1	**Module name** MSE-3212	**Macroeconomics: Business cycles**	**5 ECTS**
2	Courses/lectures	L: Advanced macroeconomics (2 SWS) E: Exercise (2 SWS)	2,5 ECTS 2,5 ECTS
3	Lecturers	Prof. Merkl	

4	**Module coordinator**	Prof. Merkl
5	**Contents**	-Stylized facts of the business cycle -Business cycle theories -Business cycle and the labor market -Monetary theory and policy
6	**Learning objectives and skills**	Students - -learn about modern dynamic business cycle theory - -learn about dynamic labor market theory (search and matching) - -apply standard techniques (e.g., intertemporal optimization, loglinearization or simple simulations) - -learn about modern monetary theory - -compare the implications of monetary theory with modern policy making
7	**Prerequisites**	Advanced Mathematics, Macroeconomics (Bachelor)
8	**Integration in curriculum**	1. semester
9	**Module compatibility**	Master Economics: Compulsory subjects Master Arbeitsmarkt und Personal: Wahlbereich Master Sozialökonomik: Vertiefungsbereich Master FACT: Vertiefungs- und Ergänzungsbereich
10	**Method of examination**	Written examination
11	**Grading procedure**	Written examination (100%)
12	**Module frequency**	Annually in the winter term
13	**Workload**	Presence: 60 h Independent study: 90 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Gali, J., Monetary Policy, Inflation, and the Business Cycle: An Introduction to the New Keynesian Framework, 2008.

Compulsory Subjects

1	**Module name** MSE-3221	**Macroeconomics: Economic growth**	**5 ECTS**
2	Courses/lectures	L: Macroeconomics: Economic growth (2 SWS) E: Macroeconomics: Economic growth (2 SWS)	5 ECTS
3	Lecturers	Prof Büttner and assistants	

4	**Module coordinator**	Prof. Büttner
5	**Contents**	The lecture is concerned with the development of the economy over time, in particular with economic growth. In a first step the lecture considers how dynamic issues are dealt with in the context of traditional macroeconomics. We then go on and develop a dynamic model in which households, firms, and the government form expectations about future conditions and take account of future implications of current decisions. This model is varied to see implications of uncertainty and overlapping generations. Finally we discuss the sources and limits of economic growth.
6	**Learning objectives and skills**	Students - learn how to derive a standard macroeconomic model from a set of optimal decisions of agents and their (intertemporal) constraints - learn how to use the model for basic predictions about effects of changes in endowments and starting conditions on short- and long-term equilibria - learn to modify the basic model to take account of uncertainty, infinite time and overlapping generations and understand the difficulties that are associated with some of these extensions - learn to apply techniques of intertemporal optimization - get acquainted with basic characteristics of economic growth - learn conditions under which the macroeconomic model is consistent with continuous economic growth - learn about the limits and determinants of economic growth
7	**Prerequisites**	
8	**Integration in curriculum**	1. Semester
9	**Module compatibility**	Master Economics: Compulsory subjects Master Arbeitsmarkt und Personal: Wahlbereich Master Sozialökonomik: Vertiefungsbereich
10	**Method of examination**	Written examination (90 minutes)
11	**Grading procedure**	Written examination (100%)
12	**Module frequency**	Annually in the winter term
13	**Workload**	Presence: 45 h Independent study: 90 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Romer, D. (1996): *Advanced Macroeconomics,* 2. edition, Mc-Graw-Hill.

Compulsory Subjects

1	**Module name** MSE-3231	**Mathematics for economists**	**5 ECTS**
2	Courses/lectures	L: Mathematics for economists (2 weekly lecture hours) E: Mathematics for economists (1 weekly lecture hour)	2.5 ECTS 2.5 ECTS
3	Lecturers	Prof. Martin and assistants	

4	**Module coordinator**	Prof. Martin Email: alexander.martin@fau.de
5	**Contents**	The main focus of this lecture is on vector spaces, eigenvalues, quadratic forms, analysis of n variables including Taylor derivatives, finite difference and differential equation as well as optimization.
6	**Learning objectives and skills**	The aim of this module is to practice common mathematical techniques, which are required for advanced courses in Economics.
7	**Prerequisites**	Basic knowledge as known from school and typical math courses given within Bachelor programs on Economics, see for instance Sydsætter, Knut und Hammond, Peter (2008), Essential *Mathematics for Economics Analysis*, Prentice Hall, or the Bachelor chapters in Mosler, Karl, Rainer Dyckerhoff und Christoph Scheicher (2009), *Mathematische Methoden für Ökonomen*, Springer-Verlag (in German).
8	**Integration in curriculum**	1. semester: This course is a block course at the beginning of the term and starts before the official lecture period.
9	**Module compatibility**	Master Economics: Compulsory subjects Master Sozialökonomik: Vertiefungsbereich Master Arbeitsmarkt und Personal: Wahlbereich
10	**Method of examination**	L & E: Written examination
11	**Grading procedure**	Written examination (100 %)
12	**Module frequency**	Annually in the winter term
13	**Workload**	Attendance: 45 h Independent study: 105 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Sydsætter, Knut und Hammond, Peter (2008), Further *Mathematics for Economics Analysis*, Prentice Hall; Mosler, Karl; Dyckerhoff, Rainer und Scheicher, Christoph (2009), *Mathematische Methoden für Ökonomen*, Springer Verlag (in German).

Compulsory Subjects

1	**Module name** MSE-3191	**Microeconomics**	**5 ECTS**
2	Courses/lectures	Lecture: Microeconomics (2 SWS) Exercise: Microeconomics (2 SWS)	5 ECTS
3	Lecturers	Prof. Rincke	

4	**Module coordinator**	Prof. Rincke
5	**Contents**	Theory of the Consumer, Theory of the Firm, Partial Equilibrium, General Equilibrium, Anomalies
6	**Learning objectives and skills**	Students are made familiar with the fundamental concepts of microeconomics on an advanced level, including advanced formal mathematical methods. The lecture covers topics in the theory of the consumer, the theory of the firm, partial equilibrium, general equilibrium, and anomalies in behavior in relation to the standard model. In the Exercises course, students learn how to apply these concepts to selected economic problems in various settings. The module is of fundamental importance for Master students who want to advance to studying applied problems in all field of applied micro, including labor economics, public economics, and industrial organization.
7	**Prerequisites**	Basic training in formal microeconomic techniques
8	**Integration in curriculum**	1. semester
9	**Module compatibility**	Master Economics (für Studierende mit Studienbeginn vor WS 15/16): Pflichtbereich (MSE-3190) Master Economics (für Studierende mit Studienbeginn ab WS 15/16): Compulsory subjects Master Sozialökonomik: Vertiefungsbereich Master Arbeitsmarkt und Personal: Wahlbereich Master Management: Vertiefungsbereich
10	**Method of examination**	Written examination (90 minutes) and Presentation (Exercise)
11	**Grading procedure**	Written examination 80% Presentation 20%
12	**Module frequency**	Annually in the winter term
13	**Workload**	Presence: 45 h Individual studies: 105 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Jehle, Geoffrey A. und Reny, Philip J. (2001), Advanced Microeconomic Theory, 2nd ed., Addison-Wesley

Elective compulsory subjects

Module group: Labor Economics

1	**Module name** A&P-3370	**Empirische Arbeitsmarktforschung** (**Empirical labor market research**)	**5 ECTS**
2	Courses/lectures	HS: Empirische Arbeitsmarktforschung (3 SWS)	5 ECTS
3	Lecturers	Prof. Schnabel and Assistants	

4	**Module coordinator**	Prof. Schnabel
5	**Contents**	Mittels vorgegebener Datensätze werden ökonometrische Analysemethoden auf aktuelle Fragestellungen der Arbeitsmarktökonomik angewendet und diese eigenständig empirisch untersucht.
6	**Learning objectives and skills**	Die Studierenden lernen, Arbeitsmarktstudien kompetent zu interpretieren, zu bewerten und zu hinterfragen. Sie verstehen quantitative Methoden differenziert einzusetzen, Hypothesen zu bilden und diese empirisch zu überprüfen. Durch eigenes Arbeiten am PC werden sie in die Lage versetzt, selbständig Forschungsdesigns zu entwickeln, ökonometrische Analysen durchzuführen und deren Ergebnisse aufzubereiten. Zudem verstehen sie es, Erkenntnisse aus fremden oder eigenen empirischen Arbeiten prägnant darzustellen, kritisch zu bewerten und der (Fach-) Öffentlichkeit zu vermitteln.
7	**Prerequisites**	Grundkenntnisse in Arbeitsmarktökonomik und Ökonometrie
8	**Integration in curriculum**	3. Semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master Arbeitsmarkt und Personal: Wahlbereich Master Sozialökonomik: Vertiefungsbereich
10	**Method of examination**	- Kurztests - Hausarbeit
11	**Grading procedure**	Durchschnittsnote Kurztests (20%), Hausarbeit (80 %)
12	**Module frequency**	Jährlich im Wintersemester
13	**Workload**	Präsenzzeit: 45 h Eigenstudium: 105 h
14	**Module duration**	1 Semester
15	**Teaching and examination language**	Deutsch
16	**Recommended reading**	Wechselnde aktuelle Forschungsliteratur

Module group: Labor Economics

1	**Module name** MSE-2900	**Labor and personnel economics**	**5 ECTS**
2	Courses/lectures	L: Labor and personnel economics E: Excercise labor and personnel economics	3 ECTS 2 ECTS
3	Lecturers	Prof. Schnabel and assistants	

4	**Module coordinator**	Prof. Schnabel
5	**Contents**	- Labor supply - Human capital - Labor demand - Search and matching - Mobility and migration - Wages - Employment relationships and work incentives - Unemployment
6	**Learning objectives and skills**	The course imparts the major methods and insights of the analysis of labor markets and employment relationships. Students - learn the major determinants of labor supply and demand - understand the importance of human capital and work incentives - analyze the functioning of labor markets and the main reasons for unemployment - critically reflect labor market theories - are able to interpret and scrutinize empirical studies - evaluate labor market policy and firms' compensation policy.
7	**Prerequisites**	Basic knowledge of microeconomics and empirical research methods/econometrics
8	**Integration in curriculum**	2. semester
9	**Module compatibility**	Master in Economics: Elective compulsory subjects Master Sozialökonomik: Vertiefungsbereich
10	**Method of examination**	Written examination (90 minutes)
11	**Grading procedure**	Written examination (100%)
12	**Module frequency**	Annually in the summer term (from summer term 2016)
13	**Workload**	Presence: 40 h Individual studies: 110 h
14	**Module duration**	1. Semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Cahuc, P./Carcillo, S./Zylberberg, A.: *Labor Economics*, 2nd ed., Cambridge, Mass. 2014 Garibaldi, P.: *Personnel Economics in Imperfect Labour Markets*, Oxford 2006

Module group: Labor Economics

1	**Module name** MSE-2910	**Labor market policy**	**5 ECTS**
2	Courses/lectures	S: Labor market policy	5 ECTS
3	Lecturers	Prof. Stephan	

4	**Module coordinator**	Prof. Stephan
5	**Contents**	The course analyzes main topics in labor market policy, with a focus on evaluation studies of labor market institutions and active and passive labor market programs
6	**Learning objectives and skills**	Students • acquire specialized knowledge on policy debates, theoretical backgrounds, evaluation techniques, and empirical evidence for core labor market policies. • assess theoretical approaches, applied methods, and empirical results of recent research papers. • clearly present and scrutinize complex facts and results. • discuss presentations of fellow students and provide constructive feedback.
7	**Prerequisites**	Solid knowledge in microeconomics and econometrics
8	**Integration in curriculum**	3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master Arbeitsmarkt und Personal: Wahlbereich
10	**Method of examination**	Portfolio: Seminar paper (60 %), presentation of term paper (20%), discussion of a term paper of a fellow student (20%)
11	**Grading procedure**	Portfolio (100%)
12	**Module frequency**	Annually in the winter term (from winter term 2016/17)
13	**Workload**	Presence: 30 h Independent study: 120 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Boeri, T., van Ours. J. (2013). The Economics of Imperfect Labor Markets, 2nd edition. Princeton: Princeton University Press. Varying recent literature

Module group: Labor Economics

1	**Module name** MSE-2390	**Literaturseminar zu aktuellen Fragen der Arbeitsmarktökonomie** **(Literature seminar on current issues of labor economics)**	**5 ECTS**
2	Courses/lectures	S: Literaturseminar zu aktuellen Fragen der Arbeitsmarktökonomie (3 SWS)	5 ECTS
3	Lecturers	Prof. Bellmann	

4	**Module coordinator**	Prof. Bellmann
5	**Contents**	Mittels vorgegebener Datensätze werden ökonometrische Analysemethoden auf aktuelle Fragestellungen der Arbeitsmarktökonomik angewendet und diese eigenständig empirisch untersucht.
6	**Learning objectives and skills**	Die Studierenden lernen, Arbeitsmarktstudien kompetent zu interpretieren, zu bewerten und zu hinterfragen. Sie verstehen quantitative Methoden differenziert einzusetzen, Hypothesen zu bilden und diese empirisch zu überprüfen. Durch eigenes Arbeiten am PC werden sie in die Lage versetzt, selbständig Forschungsdesigns zu entwickeln, ökonometrische Analysen durchzuführen und deren Ergebnisse aufzubereiten. Zudem verstehen sie es, Erkenntnisse aus fremden oder eigenen empirischen Arbeiten prägnant darzustellen, kritisch zu bewerten und der (Fach-) Öffentlichkeit zu vermitteln.
7	**Prerequisites**	Kenntnisse in Arbeitsmarktökonomie und Ökonometrie
8	**Integration in curriculum**	3. Semester
9	**Module compatibility**	Master Arbeitsmarkt und Personal: Wahlbereich Master Economics: Elective compulsory subjects
10	**Method of examination**	Hausarbeit und Präsentation
11	**Grading procedure**	Note Hausarbeit 80 %, Note Präsentation 20 %
12	**Module frequency**	Jährlich im Wintersemester
13	**Workload**	Präsenzzeit 45 h Eigenstudium 105 h
14	**Module duration**	1 Semester
15	**Teaching and examination language**	Deutsch
16	**Recommended reading**	Wechselnde aktuelle Forschungsliteratur

Module group: Labor Economics

1	**Module name** MSE-3054	**Panel- und Evaluationsverfahren** **(Panel and evaluation methods)**	**5 ECTS**
2	Courses/lectures	V: Panel- und Evaluationsverfahren (2 SWS) Ü: Panel- und Evaluationsverfahren (1 SWS)	2,5 ECTS 2,5 ECTS
3	Lecturers	Prof. Riphahn und Assistierende	

4	**Module coordinator**	Prof. Riphahn
5	**Contents**	Endogenität im linearen Regressionsmodell; Instrumentvariablenschätzung; Statische und dynamische Paneldatenmodelle; Matching; Difference-in Differences Schätzung; Regression Discontinuity Design; Quantilsregression; Praktische Umsetzung der Lerninhalte mit Hilfe der Statistiksoftware STATA
6	**Learning objectives and skills**	Aufbauend auf der Veranstaltung „Ökonometrie 1“ erwerben die Studierenden spezialisierte Kenntnisse in Panel- und Evaluationsverfahren und wenden diese mit Hilfe der Statistiksoftware STATA an. Sie beurteilen die kausale Interpretierbarkeit empirischer Zusammenhänge und entscheiden inwieweit Endogenitätsprobleme mithilfe von Paneldaten und exogener Variation gelöst werden können. In einer freiwilligen Hausarbeit erstellen die Studierenden eine eigene empirische Analyse.
7	**Prerequisites**	Grundkenntnisse Statistik und Ökonometrie
8	**Integration in curriculum**	1. and 3. semester
9	**Module compatibility**	Master Economics (für Studierende mit Studienbeginn ab WS 15/16): Elective compulsory subjects Master Economics (für Studierende mit Studienbeginn vor WS 15/16): Wahlbereich VWL (MSE-3050) Master Sozialökonomik: freier Vertiefungsbereich oder im Pflichtbereich „Vertiefung Methoden“ (MSE-3052) Master FACT: Vertiefungs- und Ergänzungsbereich (MSE-3052) Master Management: Vertiefungsbereich (MSE-3052) Master Arbeitsmarkt und Personal: Wahlbereich (MSE-3052) Master Marketing (MSE-3053) für Studierende mit Studienbeginn ab WS 13/14: - Vertiefungsbereich Marketing Research - Wahlpflichtbereich der Modulgruppe „Methoden“ im Vertiefungsbereich Marketing Management Master Marketing (MSE-3053) für Studierende mit Studienbeginn vor WS 13/14: - Pflichtmodul im Vertiefungsbereich Marketing Research, sofern Statistik II als Wahlpflichtmodul im Pflichtbereich gewählt wurde - Wahlpflichtmodul im Vertiefungsbereich Marketing Research, sofern Statistik II nicht als Wahlpflichtmodul im Pflichtbereich gewählt wurde - Wahlmodul in der Modulgruppe „Methoden“ im Vertiefungsbereich Marketing Research, wenn nicht bereits als Wahlpflichtmodul gewählt

		Wahlmodul in der Modulgruppe „Methoden“ im Vertiefungsbereich Marketing Management
10	**Method of examination**	V & Ü: Klausur
11	**Grading procedure**	Klausur (100 %), bei Notenverbesserung ist eine freiwillige Hausarbeit zu 20% anrechenbar, in der auf Basis eines Datensatzes und gestützt auf statistische Anwendungssoftware (z.B. Stata) eine empirische Fragestellung bearbeitet wird.
12	**Module frequency**	Jährlich im Wintersemester (geblockt in der 2ten Semesterhälfte)
13	**Workload**	Präsenzzeit: 45 h Eigenstudium: 105 h
14	**Module duration**	Zweite Hälfte des Wintersemesters (geblockte Veranstaltung, pro Woche 4 SWS Vorlesung und 2 SWS Übung)
15	**Teaching and examination language**	Deutsch
16	**Recommended reading**	Hsiao, Cheng (2003), *Analysis of Panel Data*, 2nd ed. Cambridge Univ. Press. Lee, Myoung-Jae (2005), *Micro-Econometrics for Policy, Program and Treatment Effects*, Oxford Univ. Press. Wooldridge, J.M.(2010), *Econometric Analysis of Cross Section and Panel Data,* 2.A., MIT Press. Verbeek, Marno (2012)*, A Guide to Modern Econometrics*, 4. A., Wiley.

Module group: Labor Economics

1	**Module name** MSE-3104	**Mikroökonometrie (Microeconometrics)**	**5 ECTS**
2	Courses/lectures	V: Mikroökonometrie (2 SWS) Ü: Mikroökonometrie (1 SWS)	2,5 ECTS 2,5 ECTS
3	Lecturers	Prof. Riphahn und Assistierende	

4	**Module coordinator**	Prof. Riphahn
5	**Contents**	Konzept der Maximum-Likelihood-Schätzung in Matrixnotation; Schätz- und Testverfahren für diskrete abhängige Variablen, Tobit-Modelle, Selektionsmodelle, Verweildauermodell, Zähldatenmodelle; Praktische Umsetzung der Lerninhalte mit Hilfe der Statistiksoftware STATA
6	**Learning objectives and skills**	Aufbauend auf der Veranstaltung „Ökonometrie 1“ erwerben die Studierenden spezialisierte Kenntnisse in nicht linearen Schätz- und Testverfahren und wenden diese mit Hilfe der Statistiksoftware STATA an. Sie diskutieren und bewerten die Geeignetheit verschiedener Modelle im praxisbezogenen Kontext und erstellen eigene empirische Analysen im Rahmen einer freiwilligen Hausarbeit.
7	**Prerequisites**	Grundkenntnisse Statistik und Einführungsveranstaltung Ökonometrie
8	**Integration in curriculum**	2. Semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master Economics (für Studierende mit Studienbeginn vor WS 15/16): Wahlbereich VWL (MSE-3100) Master Sozialökonomik: freier Vertiefungsbereich oder im Pflichtbereich „Vertiefung Methoden“ (MSE-3102) Master in Management: Vertiefungsbereich (MSE-3102) Master Marketing: Wahlpflichtbereich der Modulgruppe „Methoden“ (MSE-3103) Master Arbeitsmarkt und Personal: Wahlbereich (MSE-3101)
10	**Method of examination**	V & Ü: Klausur
11	**Grading procedure**	Klausur (100 %), bei Notenverbesserung ist eine freiwillige Hausarbeit zu 20% anrechenbar, in der auf Basis eines Datensatzes und gestützt auf statistische Anwendungssoftware (z.B. Stata) eine empirische Fragestellung bearbeitet wird.
12	**Module frequency**	Jährlich im Sommersemester
13	**Workload**	Präsenzzeit: 45 h Eigenstudium: 105 h
14	**Module duration**	1 Semester
15	**Teaching and examination language**	Deutsch
16	**Recommended reading**	Cameron, Colin und Pravin K. Trivedi (2005), *Microeconometrics. Methods and Applications*, Cambridge Univ. Press. Verbeek, Marno (2012)*, A Guide to Modern Econometrics*, 4. A., Wiley. Wooldridge, J.M.(2010), *Econometric Analysis of Cross Section and Panel Data,* 2.A., MIT Press.

Module group: Labor Economics

1	**Module name** MSE-3071	**Personnel economics**	5 ECTS
2	Courses/lectures	S: Personnel economics (2SWS) (Compulsory attendance)	5 ECTS
3	Lecturers	Prof. Riphahn	

4	**Module coordinator**	Prof. Riphahn
5	**Contents**	The seminar addresses key topics of modern personnel economics research, such as hiring, contract design, motivation, training, teamwork, and group incentives.
6	**Learning objectives and skills**	Students acquire specialized knowledge personnel economics theories and research questions. By preparing short thesis papers and a seminar paper students learn to evaluate and critically discuss methodological choices and substantive conclusions drawn in recent empirical research papers. Students assess theoretical approaches, applied empirical methods and results of recent research papers. Students present and scrutinize complex facts and results. They discuss the theoretical background, empirical method, and empirical evidence on personnel economics research contributions, discuss presentations of fellow students and provide constructive feedback.
7	**Prerequisites**	Basic knowledge of microeconomics and econometrics
8	**Integration in curriculum**	2. Semester
9	**Module compatibility**	Master Economics (für Studierende mit Studienbeginn vor WS 15/16): Wahlbereich VWL (MSE-3070) Master Economics (für Studierende mit Studienbeginn ab WS 15/16): Elective compulsory subjects Master Arbeitsmarkt und Personal: Wahlbereich Master Sozialökonomik: freier Vertiefungsbereich oder im Bereich „Spezielle VWL“ Master Wirtschaftspädagogik, Studienrichtung I: Wahlbereich
10	**Method of examination**	S Seminar paper, thesis papers
11	**Grading procedure**	S: Seminar paper (60%), thesis papers (40%)
12	**Module frequency**	annually in the summer term
13	**Workload**	Presence: 45 hours Independent study: 105 hours
14	**Module duration**	1 Semester
15	**Teaching and examination language**	English, written contributions can be submitted in German language
16	**Recommended reading**	Garibaldi, Pietro (2006), *Personnel Economics in Imperfect Labour Markets*, Oxford Univ. Press. Neilson, William S. (2007), *Personnel Economics*, Pearson Educ. Inc. Lazear, Edward P. (1998), *Personnel Economics*, MIT Press. Sowie eine Aufsatzsammlung.

Module group: Macroeconomics and Finance

1	**Module name** MSE-3322	**Advanced data analysis**	**5 ECTS**
2	Courses/lectures	L: Fortgeschrittene Datenanalyse (2 SWS) E: Fortgeschrittene Datenanalyse (2 SWS)	**2.5 ECTS** **2.5 ECTS**
3	Lecturers	Prof. Klein and assistants	

4	**Module coordinator**	Prof. Klein
5	**Contents**	Endogeneity; GMM, (recursive) interdependent systems; SURE model and CAPM; Structural equation modeling, path analysis; Copula models; Concepts of causality
6	**Learning objectives and skills**	Applying structural equation models incl. PLS and confirmatory factor analysis on complex latent variable problems independently and using statistical software R; Evaluating possibilities and limits of causality analysis in comparison with dynamic approaches (e.g. Granger causality)
7	**Prerequisites**	Knowledge in basic lectures of econometrics
8	**Integration in curriculum**	2. or 4. semester
9	**Module compatibility**	Master Economics (für Studierende mit Studienbeginn ab WS 15/16): Elective compulsory subjects Master Economics (für Studierende mit Studienbeginn vor WS 15/16): Wahlbereich VWL (MSE-3320) Master Marketing (MSE-3321) für Studierende mit Studienbeginn ab WS 13/14: - Wahlpflichtbereich der Modulgruppe „Methoden“ Master Marketing (MSE-3321)für Studierende mit Studienbeginn vor WS 13/14: - Wahlpflichtmodul im Vertiefungsbereich Marketing Research - Wahlmodul in der Modulgruppe „Methoden“ im Vertiefungsbereich Marketing Research, wenn nicht bereits als Wahlpflichtmodul gewählt - Wahlmodul in der Modulgruppe „Methoden“ im Vertiefungsbereich Marketing ManagementMaster FACT: Vertiefungs- und Ergänzungsbereich (MSE-3320) Master Arbeitsmarkt und Personal: Wahlbereich (MSE-3320)
10	**Method of examination**	L/E: 30-minute oral examination
11	**Grading procedure**	Oral examination (100%)
12	**Module frequency**	Annually in the summer term
13	**Workload**	Presence: 60h Independent study: 90h
14	**Module duration**	1 semester
15	**Teaching and examination language**	German
16	**Recommended reading**	Verbeek, Marno (2008), *A Guide to Modern Econometrics*, 3rd Ed., Wiley. Greene, William (1997), *Econometric Analysis*, Prentice Hall. Fahrmeir, L., Hamerle, A., Tutz, G. (1996), *Multivariate statistische Verfahren*, deGruyter. McNeil, A., Frey, R., Embrechts, P. (2005), *Quantitative Risk*

		Management: Concepts, Techniques and Tools, Princeton University Press. Schlittgen, Rainer (2009), *Multivariate Statistik*, Oldenbourg.

Module group: Macroeconomics and Finance

1	**Modulbezeichnung** MSE-4620	**Applications in macroeconomics and financial economics**	**5 ECTS**
2	Lehrveranstaltungen	S: Applications in macroeconomics and financial economics	5 ECTS
3	Dozenten	Prof. Merkl and Assistants	

4	**Modulverantwortlicher**	Prof. Merkl
5	**Inhalt**	- Applications in Macroeconomics - Applications in Financial Economics
6	**Lernziele und Kompetenzen**	Students either - perform their own empirical analysis based on a scientific paper, - do a dynamic model simulation based on a scientific paper, - use and analyze data from a practical partner.
7	**Empfohlene Voraussetzungen für die Teilnahme**	„Macroeconomics: Business Cycles“ and „Applied Econometrics“ .
8	**Einpassung in Musterstudienplan**	2. or 4. semester
9	**Verwendbarkeit des Moduls**	Master Economics
10	**Studien- und Prüfungsleistungen**	Written seminar work (15 pages) and presentation (15 minutes)
11	**Berechnung Modulnote**	S: 100%
12	**Turnus des Angebots**	Module will be offered once during the summer term 2017
13	**Arbeitsaufwand**	Presence time: 30 h Own work: 120 h
14	**Dauer des Moduls**	1 Semester
15	**Unterrichtssprache**	English
16	**Vorbereitende Literatur**	.

Module group: Macroeconomics and Finance

1	**Module name** FACT-6530	**Asset liability management (Versicherungen)** **(Asset liability management (insurance))**	**5 ECTS**
2	Courses/lectures	S3: Asset liability management (Versicherungen) (Asset liability management (insurance))	5 ECTS
3	Lecturers	Prof. Gatzert und Mitarbeitende	

4	**Module coordinator**	Prof. Gatzert
5	**Contents**	- Darstellung von Konzepten zum Asset Management (grundsätzliche Überlegungen, Risikostreuung in der Praxis, rechtliche Rahmenbedingungen und strategische Aspekte der Kapitalanlagepolitik; Performancemessung) - Liability Management (Rückversicherungsformen, Alternativer Risikotransfer) - Asset Liability Management mit Fokus auf Versicherungen (Immunisierungsansätze (Cashflow und Duration Matching), Optimierungsstrategien, Szenarioanalysen und Dynamische Finanzanalyse)
6	**Learning objectives and skills**	- Die Studierenden erlernen, untersuchen und hinterfragen die grundlegenden und vertiefenden Konzepte des Asset sowie Liability Managements eines Versicherungsunternehmens - Hieraus folgern sie Methoden eines ganzheitlichen Asset-Liability-Managements
7	**Prerequisites**	Keine
8	**Integration in curriculum**	WS: 2. Semester; SS: 1. Semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master FACT: Vertiefungs- und Ergänzungsbereich Master Sozialökonomik: freier Vertiefungsbereich Master Arbeitsmarkt und Personal: Wahlbereich Master Management: Vertiefungsbereich
10	**Method of examination**	60-minütige Klausur
11	**Grading procedure**	100%
12	**Module frequency**	Jährlich im Sommersemester
13	**Workload**	Präsenzzeit: 45 h Eigenstudium: 105 h
14	**Module duration**	1 Semester
15	**Teaching and examination language**	Deutsch
16	**Recommended reading**	▪ Die vorbereitende Literatur und auch die weitergehende, forschungsbezogene Literatur werden im Rahmen der Veranstaltung bekannt gegeben.

Module group: Macroeconomics and Finance

1	**Module name** FACT-2560	**Banking supervision: Bank rating, stress testing, financial stability**	**5 ECTS**
2	Courses/lectures	L: Central Banking (2 SWS)	5 ECTS
3	Lecturers	Dr. Thomas Kick	

4	**Module coordinator**	Prof. Merkl
5	**Contents**	This course covers a wide range of topics in banking supervision (e.g., bank rating models and risk assessment in banking supervision; different concepts of stress testing credit, market, and liquidity risk; development and analysis of bank stability indicators; bank resolution; financial stability and macroprudential oversight in the EU). Basic analytical concepts will be provided as a background; the last EBA/SSM Stress Test will be used to analyze the implications of such an exercise for banks, policy makers, and international organizations. A case study based on the econometrics software Stata will be used to develop empirical bank rating and stress testing tools.
6	**Learning objectives and skills**	Students -learn about banking structure, regulation, bank bailouts, and corporate governance in banking. - understand and apply different concepts of bank rating and stress testing; develop tools using the econometrics software Stata. - analyze competition and efficiency in banking markets and understand the concept of financial stability.
7	**Prerequisites**	Macroeconomics (Bachelor)
8	**Integration in curriculum**	1. and 3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master FACT: Vertiefungs- und Ergänzungsbereich
10	**Method of examination**	Written examination
11	**Grading procedure**	Written examination (100%) [The grade can be improved up to 30% with a voluntary project work.]
12	**Module frequency**	Annually in the winter term
13	**Workload**	Presence: 30 h Independent study: 120 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Presentation slides and relevant literature will be provided.

Module group: Macroeconomics and Finance

1	**Module name** FACT-6270	**Financial engineering and structured finance**	**5 ECTS**
2	Courses/lectures	V + Ü: Financial engineering and structured finance (2 + 1 SWS)	5 ECTS
3	Lecturers	Prof. Scholz and assistants	

4	**Module coordinator**	Prof. Scholz
5	**Contents**	- Darstellung und Bewertung von Aktien-, Zinssatz- & Bondoptionen - Strukturierter Produkte im Fixed Income und Equity Bereich - Kapitalstruktur und Optionspreistheorie - Darstellung und Bewertung von Kreditderivaten
6	**Learning objectives and skills**	Die Studierenden - erarbeiten sich ein tiefgehendes Wissen über Aktien-, Zinssatz und Bondoptionen, können deren Einsatzmöglichkeiten beurteilen und ihren Wert bestimmen. - wenden zentrale Kenntnisse der Optionspreistheorie an, um Bestandteile komplexer, strukturierter Fixed Income- und Equity-Produkte zu analysieren, diese zu bewerten und deren Wertbeitrag für Kunden einer Bank zu evaluieren. - können unter Berücksichtigung von Kundenpräferenzen eigenständig innovative Finanzprodukte entwickeln. - sind in der Lage die Positionen Eigen- und Fremdkapital von Unternehmen auf Basis der Optionspreistheorie zu bewerten. - können Instrumente zum Kreditrisikotransfer erläutern und deren Einsatzmöglichkeiten kritisch hinterfragen.
7	**Prerequisites**	Finanz- und Bankmanagement, Kapitalmarktorientierte Unternehmenssteuerung
8	**Integration in curriculum**	WS: 2. Semester SS: 1. Semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master FACT: Vertiefungs- und Ergänzungsbereich Master Management: Vertiefungsbereich Master Sozialökonomik: Vertiefungsbereich Master Arbeitsmarkt und Personal: Wahlbereich
10	**Method of examination**	60-minütige Klausur
11	**Grading procedure**	Klausur (100%)
12	**Module frequency**	Jährlich im Sommersemester
13	**Workload**	Präsenzzeit: 45 h Eigenstudium: 105 h
14	**Module duration**	1 Semester
15	**Teaching and examination language**	Deutsch
16	**Recommended reading**	Hull, John C.: Options, futures and other derivatives. Weitergehende, forschungsbezogene Literatur wird im Rahmen der Veranstaltung bekannt gegeben

Module group: Macroeconomics and Finance

1	**Module name** FACT-3770	**Finanz- und Bankmanagement** **(Financial and bank management)**	**5 ECTS**
2	Courses/lectures	V + Ü: Finanz- und Bankmanagement (2 + 1 SWS)	5 ECTS
3	Lecturers	Prof. Scholz and assistants	

4	**Module coordinator**	Prof. Scholz
5	**Contents**	- Klassische Ansätze zum Management von Marktzinsrisiken - Darstellung und Bewertung moderner Finanzinstrumente und Finanzprodukte (z.B. Optionen, Futures, Forwards und Swaps) - „Value at Risk“ zur Messung finanzieller Risiken - Aufbau und Funktion von Finanzsystemen - Steuerungssysteme für Finanzunternehmen
6	**Learning objectives and skills**	Die Studierenden - ermitteln Zinsrisiken von Anleiheportfolios und beurteilen Instrumente zur Reduktion von Zinsrisiken und deren Einsatz aus Kundensicht. - können diverse Fixed-Income Produkte wie Kupon-Anleihen, Floating Rates Notes und Zinsswaps bewerten und deren Chancen-Risiko-Profile beurteilen. - bestimmen die Kennzahl „Value at Risk“ für Portfolios und unter Anwendung verschiedene Konzepte der Volatilitätsschätzung. - können den generellen Aufbau und die Funktion des Banken und Finanzsystems erläutern - beurteilen auf Basis der Marktzinsmethode die Geschäftspolitik einer Bank.
7	**Prerequisites**	keine
8	**Integration in curriculum**	WS: 1. Semester SS: 2. Semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master FACT: Vertiefungs- und Ergänzungsbereich Master Management: Vertiefungsbereich Master Wirtschaftspädagogik, Studienrichtung I: fachwissenschaftlicher Pflichtbereich, sofern nicht im Wahlbereich in Block 3 belegt; Studienrichtung II: fachwissenschaftlicher Wahlbereich Master Sozialökonomik: Vertiefungsbereich Master Arbeitsmarkt und Personal: Wahlbereich
10	**Method of examination**	60-minütige Klausur
11	**Grading procedure**	Klausur (100%)
12	**Module frequency**	Jährlich im Wintersemester
13	**Workload**	Präsenzzeit: 45 h Eigenstudium: 105 h
14	**Module duration**	1 Semester
15	**Teaching and examination language**	Deutsch
16	**Recommended reading**	Hartmann-Wendels, T. / Pfingsten, A. / Weber, M.: Bankbetriebslehre, Berlin. Weitergehende, forschungsbezogene Literatur wird im Rahmen der Veranstaltung bekannt gegeben

Module group: Macroeconomics and Finance

1	**Module name** MSE-3261	**Fundamental statistical theory of econometrics**	**5 ECTS**
2	Courses/lectures	L: Statistische Grundlagen der Ökonometrie (2 SWS) E: Statistische Grundlagen der Ökonometrie (2 SWS)	5 ECTS
3	Lecturers	Prof. Klein and colleagues	

4	**Module coordinator**	Prof. Klein
5	**Contents**	Multidimensional normal distribution; distributions derived from the normal distribution, distribution of functions of random variables, moment generating function technique; distribution of linear and quadratic forms of standard normal distributed random variables; Neyman-Pearson tests; generalized Likelihood-ratio-test; testing in the (general) linear model; asymptotic properties of OLS- and ML-estimators; Wald- and LM-test
6	**Learning objectives and skills**	Analytical understanding of the theoretical foundations of econometrics of normal distributed populations; Application of important theoretical statistical techniques (i.e. transformation of variables, asymptotic)
7	**Prerequisites**	Basic knowledge in statistics, mathematical analysis and linear algebra, which is taught in relevant bachelor courses
8	**Integration in curriculum**	3. semester
9	**Module compatibility**	Master in Economics: Elective compulsory subjects Master Arbeitsmarkt und Personal: Wahlbereich (MSE-3260)
10	**Method of examination**	L/E: written examination (120 minutes)
11	**Grading procedure**	Written examination (100%)
12	**Module frequency**	Annually in the winter term
13	**Workload**	Presence: 60h Independent study: 90h
14	**Module duration**	1 semester
15	**Teaching and examination language**	German
16	**Recommended reading**	Fahrmeir, Ludwig; Hamerle, Alfred und Tutz, Gerhard, *Multivariate statistische Verfahren*, Walter de Gruyter (latest edition). Greene, William, *Econometric Analysis*, Prentice Hall (latest edition). Klein, Ingo, *Stichproben aus normalverteilten Grundgesamtheiten*, Vorlesungsskript (latest edition).

Module group: Macroeconomics and Finance

1	**Module name** MSE-2290	**International finance**	**5 ECTS**
2	Courses/lectures	Lecture: International finance, theory and policy (2 SWS)	5 ECTS
3	Lecturers	Prof. Merkl	

4	**Module coordinator**	Prof. Merkl
5	**Contents**	This course covers a wide range of topics (e.g., exchange rates and exchange rate regimes, national accounts and capital flows, international financial system, international banking and central banking). Basic economic concepts will be provided as a background. Statistics and empirical results will be shown to understand the validity of these concepts. Recent real life examples/case studies will be used to analyze the implications for policy makers, international organisations and business.
6	**Learning objectives and skills**	Students – understand and apply basic concepts of exchange rate determination and their validity. – learn about driving forces of capital flows. – analyze how international (central) banking and the international financial system work. – apply their knowledge in a presentation (either in case study style or in a small quantitative project).
7	**Prerequisites**	Macroeconomics (Bachelor)
8	**Integration in curriculum**	1. and 3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master IBS: Core courses Master FACT: Vertiefungs- und Ergänzungsbereich
10	**Method of examination**	Written examination
11	**Grading procedure**	Written examination (100%) [The grade can be improved up to 30% with a voluntary presentation during the winter term.]
12	**Module frequency**	Annually in the winter term
13	**Workload**	Presence: 30 h Independent study: 120 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Presentation slides and relevant literature will be provided

Module group: Macroeconomics and Finance

1	**Module name** MSE-3342	**Labor markets: A macroeconomic perspective**	**5 ECTS**
2	Courses/lectures	S: Topics in macro-labor (2 SWS) L: Introduction to macro-labor theory and empirics (1 SWS)	4 ECTS 1 ECTS
3	Lecturers	Prof. Gehrke/ Dr. Stüber	

4	**Module coordinator**	Prof. Gehrke
5	**Contents**	-Stylized macroeconomic facts of the labor market -The labor market and business cycle dynamics -Modern dynamic labor market models and their role in macroeconomic models -The importance of wage rigidities
6	**Learning objectives and skills**	Students learn - to analyze macroeconomic stylized facts of the labor market - to model unemployment in macroeconomics - to critically evaluate the ability of dynamic labor market models (e.g., search and matching) to replicate business cycle facts - to evaluate macroeconomic (policy) implications.
7	**Prerequisites**	Macroeconomics 1, Econometrics
8	**Integration in curriculum**	3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master Arbeitsmarkt und Personal: Wahlbereich Master Sozialökonomik: Vertiefungsbereich
10	**Method of examination**	Portfolio: Seminar paper, presentation and discussion
11	**Grading procedure**	Portfolio: 100%
12	**Module frequency**	Annually in the winter term
13	**Workload**	Presence: 20 h Independent study: 130 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Pissarides, C. Equilibrium Unemployment. 2000, MIT Press, Cambridge. Chapters 1 & 9. Recent research articles

Module group: Macroeconomics and Finance

1	**Module name** FACT-6540	**Lebensversicherung** **(Life insurance)**	5 ECTS
2	Courses/lectures	S3: Lebensversicherung (Life insurance)	5 ECTS
3	Lecturers	Prof. Gatzert und Mitarbeitende	

4	**Module coordinator**	Prof. Gatzert
5	**Contents**	- Einführung in den Lebensversicherungsmarkt - Darstellung von klassischen und innovativen Lebensversicherungsprodukten (und den darin enthaltenen impliziten Optionen) - Versicherungsmathematische Aspekte: Bestimmung von Prämien und Deckungsrückstellungen auf Basis der typischen aktuariellen Rechnungsgrundlagen (Zins, Sterbetafeln) - Analyse und Bewertung von Fondsprodukten mit Garantien - Absicherung von Garantien in Fondsprodukten mit Kapitalanlagestrategien (u.a. Constant Proportion Portfolio Insurance)
6	**Learning objectives and skills**	- Die Studierenden können aktuelle Entwicklungen im Lebensversicherungsmarkt beurteilen und hinterfragen diese - Die Studierenden berechnen Prämien und Deckungsrückstellungen von klassischen Lebensversicherungsverträgen - Des Weiteren bewerten sie klassische und fondsgebundene Lebensversicherungsprodukte mit verschiedenen Garantien und vergleichen verschiedene Methoden der Bewertung - Die Studierenden schätzen ein, wie verschiedene Arten von Finanzgarantien abgesichert werden müssen und wenden hierfür auch Kapitalanlagestrategien an
7	**Prerequisites**	keine
8	**Integration in curriculum**	WS: 2. Semester; SS: 1. Semester
9	**Module compatibility**	Master FACT: Vertiefungs- und Ergänzungsbereich Master Sozialökonomik: freier Vertiefungsbereich Master Arbeitsmarkt und Personal: Wahlbereich Master Economics: Elective compulsory subjects Master Management: Vertiefungsbereich
10	**Method of examination**	60-minütige Klausur
11	**Grading procedure**	100%
12	**Module frequency**	jährlich im Sommersemester
13	**Workload**	Präsenzzeit: 45 h Eigenstudium: 105 h
14	**Module duration**	1 Semester
15	**Teaching and examination language**	Deutsch
16	**Recommended reading**	Die vorbereitende Literatur und auch die weitergehende, forschungsbezogene Literatur werden im Rahmen der Veranstaltung bekannt gegeben.

Module group: Macroeconomics and Finance

1	**Module name** MSE-2640	**Macroeconomic methods: Applications to monetary policy**	**5 ECTS**
2	Courses/lectures	L: Macroeconomic methods: Applications to monetary policy (2 SWS)	5 ECTS
3	Lecturers	Prof. Gehrke	

4	**Module coordinator**	Prof. Gehrke
5	**Contents**	- Macroeconomic modeling and model solution illustrated with the New Keynesian model and extensions - Model evaluation using time series evidence - Structural vectorautoregressions - Estimation of DSGE models - Methods are illustrated with monetary policy applications
6	**Learning objectives and skills**	Students learn and evaluate methods of modern macroeconomic analyses. Students explore how to bridge theoretical macroeconomic models and empirical methods based on time series data. Students apply these methods to questions related to monetary policy.
7	**Prerequisites**	Macroeconomics 1, Econometrics
8	**Integration in curriculum**	2. semester
9	**Module compatibility**	Master in Economics: Elective compulsory subjects Master in Arbeitsmarkt und Personal: Wahlbereich Master in Sozialökonomik: Vertiefungsbereich Master FACT: Vertiefungs- und Ergänzungsbereich
10	**Method of examination**	Research project (The final grade may be improved up to 30% in case of successful homework preparation.)
11	**Grading procedure**	Research project (100%)
12	**Module frequency**	Annually in the summer term
13	**Workload**	Presence: 30 h Independent study: 120 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Canova, Fabio (2007), “Methods for Applied Macroeconomic Research”, Princeton University Press. DeJong, David N., and Chetan Dave (2011). ”Structural Macroeconometrics”, Princeton University Press.

Module group: Macroeconomics and Finance

1	**Module name** MSE-3312	**Multivariate time series analysis**	**5 ECTS**
2	Courses/lectures	L: Multivariate Zeitreihenanalyse (2SWS) E: Multivariate Zeitreihenanalyse (2SWS)	2.5 ECTS 2.5 ECTS
3	Lecturers	Prof. Klein and assistants	

4	**Module coordinator**	Prof. Klein
5	**Contents**	Repetition: Concepts of univariate time series analysis; bivariate distributions: tests for multivariate normality, alternative distribution models; stationary vector autoregressive processes: basics, estimation, order selection, forecasting, structural analysis; integrated processes: spurious correlations versus cointegration, error correction models; multivariate GARCH models
6	**Learning objectives and skills**	Application of tests for multivariate normality; ability to independently analyse multivariate stationary time series with vector autoregressive processes; assessment of the challenges of spurious correlations in the light of integrated time series and analysis of these time series for cointegration; comprehension and application of basic multivariate GARCH models; application of existing and development of proprietary functions for analysing multivariate time series using the statistical software R
7	**Prerequisites**	Proficiency in univariate time series analysis and basic concepts of econometrics
8	**Integration in curriculum**	2. semester
9	**Module compatibility**	Master Economics (für Studierende mit Studienbeginn ab WS 15/16): Elective compulsory subjects Master Economics (für Studierende mit Studienbeginn vor WS 15/16): Wahlbereich (MSE-3310) Master FACT: Vertiefungs- und Ergänzungsbereich Master Arbeitsmarkt und Personal: Wahlbereich (MSE-3311) Master Marketing (MSE-3311) für Studierende mit Studienbeginn ab WS 13/14: Wahlpflichtbereich der Modulgruppe „Methoden“Master Marketing (MSE-3311) für Studierende mit Studienbeginn vor WS 13/14: - Wahlpflichtmodul im Vertiefungsbereich Marketing Research - Wahlmodul in der Modulgruppe „Methoden“ im Vertiefungsbereich Marketing Research, wenn nicht bereits als Wahlpflichtmodul gewählt - Wahlmodul in der Modulgruppe „Methoden“ im Vertiefungsbereich Marketing Management
10	**Method of examination**	L & E: 30-minute oral examination
11	**Grading procedure**	Oral examination (100%)
12	**Module frequency**	Annually in the summer term

13	**Workload**	Presence: 60h Independent study: 90h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Lütkepohl, H. (2005), *New Introduction to Multiple Time Series Analysis*, Springer. McNeil, A., Frey, R., Embrechts, P. (2005), *Quantitative Risk Management: Concepts, Techniques and Tools*, Princeton University Press. Schmid, F., Trede, M. (2006), *Finanzmarktstatistik*, Springer. Tsay, R.S. (2002), *Analysis of Financial Time Series*, Wiley. Verbeek, M. (2008), *A Guide to Modern Econometrics*, 3. Auflage, Wiley.

Module group: Macroeconomics and Finance

1	**Module name** MSE-5200	**Nichtparametrische statistische Verfahren (Non-parametric statistical methods)**	**5 ECTS**
2	Courses/lectures	L: Nichtparametrische statistische Verfahren (2 SWS) E: Nichtparametrische statistische Verfahren (2 SWS)	2,5 ECTS 2,5 ECTS
3	Lecturers	Prof. Klein and assistants	

4	**Module coordinator**	Prof. Klein
5	**Contents**	Statistical Tests on basis of the empirical distribution, order statistics and rank tests for common problems (esp. Analysis of variance, experimental design); Non-parametric density estimation and regression; bootstrapping
6	**Learning objectives and skills**	Assessment of the procedures and competences mentioned above via statistical software R; Analytical evaluation of the results of studies applying non-parametrical methods.
7	**Prerequisites**	Basic lectures on Statistics in relevant Bachelor courses
8	**Integration in curriculum**	First and second semester
9	**Module compatibility**	Master Economics (für Studierende mit Studienbeginn ab WS 15/16): Elective compulsory subjects Master Economics (für Studierende mit Studienbeginn vor WS 15/16): Wahlbereich VWL Master in Marketing: Wahlpflichtbereich der Modulgruppe „Methoden“; Modul dient als Ersatz für die Veranstaltung „Datenermittlung“ falls diese bereits in einem Bachelorstudiengang belegt wurde Master Sozialökonomik: freier Vertiefungsbereich oder im Pflichtbereich „Vertiefung Methoden“ Moreover, the Module may be used as substitut for the lecture "Datenermittlung" if this has yet been attended during Bachelor-courses
10	**Method of examination**	Lect/Ex: 30-minute oral examination
11	**Grading procedure**	Oral examination (100%)
12	**Module frequency**	Each summer term
13	**Workload**	Presence:60h Home study: 90h
14	**Module duration**	1 semester
15	**Teaching and examination language**	German
16	**Recommended reading**	Conover, W. J. (1999), Practical Nonparametric Statistics, 3rd ed., Wiley. Büning, H., Trenkler, G. (1994), Nichtparametrische statistische Methoden, 2. Aufl., Berlin.

Module group: Public Economics

1	**Module name** MSE-4610	**Public economics in theory and practice**	**5 ECTS**
2	Courses/lectures	L + T: Public economics in theory an practice (2 + 2 SWS)	5 ECTS
3	Lecturers	Prof. Büttner and assistants	

4	**Module coordinator**	Prof. Büttner
5	**Contents**	The lecture provides an introduction in public economics at intermediate level. The course first derives the basic theoretical foundations for an optimal design of public policy. In the second step, the course discusses specific aspects of public policy, such as taxation and redistribution, social security, tax evasion, debt finance, interjurisdictional competition and fiscal federalism and explores practical problems.
6	**Learning objectives and skills**	Students know how to characterize efficient public policies using microeconomic decision models. They can use this framework to study public policy in a rigorous and consistent general equilibrium context. Students are acquainted with important empirical approaches to evaluate public policies quantitatively. Moreover, they know about options, methods and limits to implement efficient public policy
7	**Prerequisites**	Basic microeconomics
8	**Integration in curriculum**	2nd Semester in MSE, FACT, Arbeitsmarkt und Personal 2nd Semester in Wing
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master Wirtschaftsingenieurwesen: Wahlbereich Master FACT: Vertiefungs- und Ergänzungsbereich Master Arbeitsmarkt und Personal: Wahlbereich
10	**Method of examination**	Lecture and Tutorial: Written exam (90 minutes)
11	**Grading procedure**	Written exam (100%)
12	**Module frequency**	Summer term
13	**Workload**	Presence: 60 h Independent study: 90 h Lecture notes are provided at the beginning of the course.
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Hindriks and Myles (2006) Intermediate Public Economics, MIT Press Cambridge

Module group: Public Economics

1	**Module name** MSE-3281	**Behavioral economics**	**5 ECTS**
2	Courses/lectures	Lecture: Behavioral economics (2 SWS) Exercise: Behavioral economics (1 SWS)	2,5 ECTS 2,5 ECTS
3	Lecturers	Prof. Grimm and assistants	

4	**Module coordinator**	Prof. Grimm
5	**Contents**	The course provides a theoretical and empirical introduction into the area of “Behavioral Economics”. This relatively new area of economics research wants to identify important deviations from the predictions of classical economics models and to extend existing models to account for these findings.
6	**Learning objectives and skills**	In the course the method of experimental economics is introduced and its use for behavioral oriented research is learned. Students learn the skill of using empirical and experimental studies as complements to theory in the study of strategic interactions.
7	**Prerequisites**	Completed Bachelor degree in Economics or in a related discipline, Microeconomics I and II
8	**Integration in curriculum**	2. semester
9	**Module compatibility**	Master Economics (für Studierende mit Studienbeginn vor WS 15/16): Wahlbereich VWL Master Economics (für Studierende mit Studienbeginn ab WS 15/16): Elective compulsory subjects Master Sozialökonomik: sozialökonomischer Vertiefungsbereich oder freier Vertiefungsbereich Master Arbeitsmarkt und Personal: Wahlbereich Master Marketing: Wahlmodul in der Modulgruppe „Sonstige“ für beide Vertiefungsbereiche
10	**Method of examination**	Portfolio: 90 minutes written examination (80%), homework assignments (20%)
11	**Grading procedure**	Portfolio (100%)
12	**Module frequency**	Annually in the summer term
13	**Workload**	Presence: 45 h Independent study: 105 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Camerer, Colin F. (2003), Behavioral Game Theory: Experiments on Strategic Interaction, Princeton Univ. Press. Journale articles, announcement on chair website

Module group: Public Economics

1	**Module name** MSE-6441	**Economic internship**	**5 ECTS**
2	Courses/lectures	P: External economic internship	5 ECTS
3	Lecturers	Prof. Büttner / Prof. Grimm / Prof. Merkl / Prof. Riphahn / Prof. Tauchmann	

4	**Module coordinator**	Prof. Büttner / Prof. Grimm / Prof. Merkl / Prof. Riphahn / Prof. Tauchmann
5	**Contents**	Economic internship with research institutes, international organizations, research departments of firms in relation to the Master specialisation (Public, Labor, Macro & Finance, Health, or Energy)
6	**Learning objectives and skills**	Students obtain the chance to familiarize themselves with labor market opportunities for economists and learn how to apply economic concepts and methods in practice. Students also expand their command of important soft skills, including presentation techniques and communication skills. The participants exchange their practical experiences and insights and develop a critical reflection on economic practice and job market opportunities.
7	**Prerequisites**	Students should have completed all courses of the first semester.
8	**Integration in curriculum**	Internship typically during the summer break. Presentation during the following semester. Please take notice of the application deadlines (communicated by the lecturer responsible for the respective specialisation)
9	**Module compatibility**	Master Economics
10	**Method of examination**	Completed internship; written self-report; presentation of self-report
11	**Grading procedure**	No grades (passed/failed)
12	**Module frequency**	Internship typically during the summer break. Presentation during the following semester. Please take notice of the application deadlines (communicated by the responsible lecturers for the respective specialisation)
13	**Workload**	300 h (= 6 weeks internship (full time), self-report, presentation)
14	**Module duration**	1 Semester
15	**Teaching and examination language**	German and/or English
16	**Recommended reading**	Please note: The number of internships is limited. Interested students have to apply at the external institution with recommendation by the lecturer responsible for the respective specialisation. Students can in principle also be credited for other internships provided they are sufficiently associated with economic research and fit into one of the areas. An upfront written agreement with the respective lecturer is required.

Module group: Public Economics

1	**Module name** MSE-5691	Study abroad module 1	**5 ECTS**
2	Courses/lectures	Study abroad module 1 (Auslandsmodul 1)	5 ECTS
3	Lecturers	Lecturers in foreign University Dozierende an Universität im Ausland	

4	**Module coordinator**	Prof. Tauchmann
5	**Contents**	EN: The content of the courses visited in the foreign university must be related to the topic of the master's content. The master coordinator decides on the suitability of the courses using German or English documents. DE: Die an der ausländischen Universität besuchten Lehrveranstaltungen sollten einen thematischen Bezug zu den Inhalten des Masters haben. Eine Prüfung der Eignung der Lehrveranstaltungen erfolgt durch den Masterkoordinator auf der Basis deutsch- oder englischsprachiger Unterlagen.
6	**Learning objectives and skills**	EN: Students acquire comprehensive, detailed and specialised knowledge on the research frontier. They are able to communicate this knowledge in a clear and unambiguous way in a foreign language. Besides gaining expertise students gain intercultural and social skills. Students can organize themselves and respond to changing requirements independently and in a problem-solving attitude. DE: Die Studierenden verfügen über umfassendes, detailliertes und spezialisiertes Wissen auf dem neuesten Erkenntnisstand der Wissenschaft. Sie können dieses Wissen in klarer und eindeutiger Weise auch in einer Fremdsprache vermitteln. Neben den Fachkompetenzen erwerben die Studierenden interkulturelle und soziale Kompetenzen. Die Studierenden können sich selbst organisieren und auf sich verändernde Anforderungen eigenständig und lösungsorientiert reagieren.
7	**Prerequisites**	Learning Agreement
8	**Integration in curriculum**	2. or 3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master Marketing
10	**Method of examination**	EN: In accordance with the method of examination of the foreign University. DE: In Übereinstimmung mit den Studien- und Prüfungsleistungen der ausländischen Universität.
11	**Grading procedure**	EN: Dependent on the grading scale and ECTS of the course. DE: Vom Notenschlüssel und den ECTS der Lehrveranstaltung abhängig.
12	**Module frequency**	EN: In accordance with the course offer at the foreign University. DE: In Übereinstimmung mit dem Kursangebot an der ausländischen Universität.
13	**Workload**	EN: In accordance with the time input of the courses of the foreign

		University. DE: In Übereinstimmung mit dem Arbeitsaufwand der Lehrveranstaltungen an der ausländischen Universität.
14	**Module duration**	1 Semester
15	**Teaching and examination language**	EN: In accordance with the lecture language of the foreign university. DE: Unterrichtssprache des Landes der ausländischen Universität
16	**Recommended reading**	EN: Considering the specifications of the course at the foreign university. DE: Berücksichtigung der Angaben zu den Lehrveranstaltungen an der ausländischen Universität

Module group: Public Economics

1	**Module name** MSE-5692	Study abroad module 2	**5 ECTS**
2	Courses/lectures	Study abroad module 2 (Auslandsmodul 2)	5 ECTS
3	Lecturers	Lecturers in foreign University Dozierende an Universität im Ausland	

4	**Module coordinator**	Prof. Tauchmann
5	**Contents**	EN: The content of the courses visited in the foreign university must be related to the topic of the master's content. The master coordinator decides on the suitability of the courses using German or English documents. DE: Die an der ausländischen Universität besuchten Lehrveranstaltungen sollten einen thematischen Bezug zu den Inhalten des Masters haben. Eine Prüfung der Eignung der Lehrveranstaltungen erfolgt durch den Masterkoordinator auf der Basis deutsch- oder englischsprachiger Unterlagen.
6	**Learning objectives and skills**	EN: Students acquire comprehensive, detailed and specialised knowledge on the research frontier. They are able to communicate this knowledge in a clear and unambiguous way in a foreign language. Besides gaining expertise students gain intercultural and social skills. Students can organize themselves and respond to changing requirements independently and in a problem-solving attitude. DE: Die Studierenden verfügen über umfassendes, detailliertes und spezialisiertes Wissen auf dem neuesten Erkenntnisstand der Wissenschaft. Sie können dieses Wissen in klarer und eindeutiger Weise auch in einer Fremdsprache vermitteln. Neben den Fachkompetenzen erwerben die Studierenden interkulturelle und soziale Kompetenzen. Die Studierenden können sich selbst organisieren und auf sich verändernde Anforderungen eigenständig und lösungsorientiert reagieren.
7	**Prerequisites**	Learning Agreement
8	**Integration in curriculum**	2. or 3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master Marketing
10	**Method of examination**	EN: In accordance with the method of examination of the foreign University. DE: In Übereinstimmung mit den Studien- und Prüfungsleistungen der ausländischen Universität.
11	**Grading procedure**	EN: Dependent on the grading scale and ECTS of the course. DE: Vom Notenschlüssel und den ECTS der Lehrveranstaltung abhängig.
12	**Module frequency**	EN: In accordance with the course offer at the foreign University. DE: In Übereinstimmung mit dem Kursangebot an der ausländischen Universität.
13	**Workload**	EN: In accordance with the time input of the courses of the foreign

		University. DE: In Übereinstimmung mit dem Arbeitsaufwand der Lehrveranstaltungen an der ausländischen Universität.
14	**Module duration**	1 Semester
15	**Teaching and examination language**	EN: In accordance with the lecture language of the foreign university. DE: Unterrichtssprache des Landes der ausländischen Universität
16	**Recommended reading**	EN: Considering the specifications of the course at the foreign university. DE: Berücksichtigung der Angaben zu den Lehrveranstaltungen an der ausländischen Universität

Module group: Public Economics

1	**Module name** A&P-3081	**Ökonomie der Sozialpolitik** **(Economics of social policy)**	**5 ECTS**
2	Courses/lectures	S: Ökonomie der Sozialpolitik (3 SWS)	5 ECTS
3	Lecturers	Prof. Wrede and assistants	

4	**Module coordinator**	Prof. Wrede
5	**Contents**	Ausgewählte ökonomische Analysen der Sozialpolitik unter Einschluss ethischer und ökonomischer Grundlagen sowie institutioneller Aspekte
6	**Learning objectives and skills**	- Studierende kennen ausgewählte Bereiche der Sozialpolitik und können diese beschreiben und international vergleichen. - Studierende können ethische und ökonomische Grundlagen staatlicher Eingriffe in ausgewählten Bereichen sozialer Sicherung darstellen, interpretieren und diskutieren. - Studierende können Wirkungen sozialpolitisch relevanter Größen theoretisch und empirisch verstehen, bewerten und hinterfragen. - Studierende können sozialpolitische Maßnahmen unter Effizienz- und Gerechtigkeitsgesichtspunkten bewerten und hinterfragen. - Studierende geben Ihren Kommilitonen im Rahmen ihrer Präsentationen strukturiertes Feedback. - Studierende fördern die Fachkenntnisse der anderen Studierenden durch themenspezifische Diskussionsbeiträge. - Studierende erfassen, bewerten und diskutieren ausgewählte aktuelle, meist englischsprachige Forschungsarbeiten in Ihrer Seminararbeit.
7	**Prerequisites**	Mikroökonomische und ökonometrische Kenntnisse
8	**Integration in curriculum**	2. Semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master Gesundheitsmanagement und Gesundheitsökonomie: Wahlbereich Master Arbeitsmarkt und Personal: Wahlbereich Master Wirtschaftspädagogik, Studienrichtung I: fachwissenschaftlicher Wahlbereich; Studienrichtung II: Wahlbereich im Zweitfach Sozialkunde Master Sozialökonomik: Wahlbereich
10	**Method of examination**	Portfolio - Seminararbeit - Präsentation - Diskussionsbeteiligung
11	**Grading procedure**	Portfolioprüfung (100%)
12	**Module frequency**	Jährlich im Sommersemester
13	**Workload**	Präsenzzeit: 45 h Selbststudium: 105 h
14	**Module duration**	1 Semester
15	**Teaching and**	Deutsch

	examination language	
16	**Recommended reading**	Literatur wird in der Veranstaltung bekannt gegeben.

Module group: Public Economics

1	**Module name** MSE-2930	**Seminar behavioral economics 1**	**5 ECTS**
2	Courses/lectures	S: Seminar behavioral economics 1 (3 SWS) (Compulsory attendance)	5 ECTS
3	Lecturers	Prof. Grimm, Prof Utikal, and assistants	

4	**Module coordinator**	Prof. Grimm and Prof. Utikal
5	**Contents**	The seminar sheds light on various issues in "market and institution design" focusing on selected applications. Market and institution design applies methods of game theory and (behavioral) economics to develop effective market rules. In this seminar, the focus will lie on market rules of various markets such as labor-markets or markets in the sector of health or public economics. In different market environments, phenomena like trust, social preferences, or bounded rationality are important. Understanding these aspects is of key importance for specifying the details of a particular market environment. In the seminar, we will analyse the peculiarities of selected markets and their implications for the effective organization of those markets from a theoretical and/or behavioural perspective.
6	**Learning objectives and skills**	Students - Analyze the peculiarities of markets and their operating mode within the frame of complex theoretic and behavioral models, - Discuss the validity of those models based on experimental or empirical studies, - Evaluate, based on the literature, different market and institution designs, - Autonomously analyze complex questions and develop solution concepts - Are able to write a relevant theoretic or empirical scientific essay, - Develop their presentation skills.
7	**Prerequisites**	Solid knowledge of microeconomics
8	**Integration in curriculum**	2. or 3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects
10	**Method of examination**	Portfolio: Development of a seminar thesis and presentation; discussion of a fellow students' thesis and presentation, participation in discussion
11	**Grading procedure**	Portfolio (100%)
12	**Module frequency**	Each term
13	**Workload**	Presence: 45h Independent study: 105h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English

16	**Recommended reading**	Changing recent scientific literature

Module group: Public Economics

1	**Module name** MSE-2940	**Seminar behavioral economics 2**	**5 ECTS**
2	Courses/lectures	S: Seminar behavioral economics 2 (3 SWS) (Compulsory attendance)	5 ECTS
3	Lecturers	Prof. Grimm, Prof. Utikal, and assistants	

4	**Module coordinator**	Prof. Grimm and Prof. Utikal
5	**Contents**	The seminar deals with theories and methods from behavioural and experimental economics. Although behavioral and experimental economics are relatively recent fields of research, many insights have been gained from applying the methods of the field to key economic questions. Relevant topics include, but are not limited to, nudging (in the sector of health, labor, public and energy economics), norm compliance (mainly public and labor economics), social preferences (mainly health and labor economics) or uncertainty preferences (energy economics). Depending on the topic of the seminar, questions of experimental design, conducting studies and analysis of behavioural data can be dealt with.
6	**Learning objectives and skills**	Students - Gain fundamental understanding of the methods of behavioral and experimental economics, - Learn to autonomously apply those methods, - Conceptualize own research ideas, - Analyze the peculiarities of complex economic situations, - Develop their presentation skills.
7	**Prerequisites**	Solid knowledge of microeconomics
8	**Integration in curriculum**	3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects
10	**Method of examination**	Portfolio: Development of a seminar thesis and presentation; participation in discussion
11	**Grading procedure**	Portfolio (100%)
12	**Module frequency**	Annually in the winter term (from winter term 2016/17)
13	**Workload**	Presence: 45h Independent study: 105h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Camerer, Löwenstein and Rabin (2003), *Advances in Behavioral Economics*, Princeton University Press. Changing recent scientific literature

Module group: Public Economics

1	**Module name** MSE-2950	**Seminar public economics 1**	**5 ECTS**
2	Courses/lectures	Seminar public economics 1 (3 SWS)	5 ECTS
3	Lecturers	Prof. Büttner, Prof. Rincke, Prof. Wrede	

4	**Module coordinator**	Prof. Büttner, Prof. Rincke, Prof. Wrede
5	**Contents**	Topics in Public Economics
6	**Learning objectives and skills**	Students - study selected parts of the academic literature in public economics (mostly from scientific journals) and learn how to deal with this literature - learn how to identify relevant contributions in large bodies of economic literature - learn what up-to-date methods (theory and empirics) in public economics are - learn how to read economic papers and to evaluate and assess contributions, both in terms of theory and empirical methods - learn how to delineate conclusions from the academic literature in terms of policy implications and recommendations - learn how to structure and write academic theses in economics - expand their skills in terms of presentation techniques and participation in academic discussion
7	**Prerequisites**	All techniques and methods that are part of the curriculum in the first semester
8	**Integration in curriculum**	2. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects
10	**Method of examination**	Portfolio: Seminar paper (15 pages), Presentation, Discussion of other participants' presentations
11	**Grading procedure**	Portfolio: 100%
12	**Module frequency**	Annually in the summer term (from summer term 2016)
13	**Workload**	Seminar attendance: 45 h Independent study: 105 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Will be provided

Module group: Public Economics

1	**Module name** MSE-2960	**Seminar public economics 2**	**5 ECTS**
2	Courses/lectures	Seminar public economics 2 (3 SWS)	5 ECTS
3	Lecturers	Prof. Büttner, Prof. Rincke, Prof. Wrede	

4	**Module coordinator**	Prof. Büttner, Prof. Rincke, Prof. Wrede
5	**Contents**	Topics in Public Economics
6	**Learning objectives and skills**	Students - study selected parts of the academic literature in public economics (mostly from scientific journals) and learn how to deal with this literature - learn how to identify relevant contributions in large bodies of economic literature - learn what up-to-date methods (theory and empirics) in public economics are - learn how to read economic papers and to evaluate and assess contributions, both in terms of theory and empirical methods - learn how to delineate conclusions from the academic literature in terms of policy implications and recommendations - learn how to structure and write academic theses in economics - expand their skills in terms of presentation techniques and participation in academic discussion
7	**Prerequisites**	All techniques and methods that are part of the curriculum in the first semester
8	**Integration in curriculum**	3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects
10	**Method of examination**	Portfolio: Seminar paper (15 pages), Presentation, Discussion of other participants' presentations
11	**Grading procedure**	Portfolio: 100%
12	**Module frequency**	Annually in the winter term (from winter term 2016/17)
13	**Workload**	Seminar attendance: 45 h Independent study: 105 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Will be provided

Module group: Public Economics

1	**Module name** MSE-5960	**Spatial economics**	**5 ECTS**
2	Courses/lectures	L: Spatial economics (2 SWS) E: Spatial economics (2 SWS)	5 ECTS
3	Lecturers	Prof. Wrede and assistants	

4	**Module coordinator**	Prof. Wrede
5	**Contents**	Geography, Trade, Mobility, and Agglomeration, Spatial Concentration, Regional Policy
6	**Learning objectives and skills**	At the end of this course, - Students are able to describe and to internationally compare the regional patterns of major economic activities in terms of stylized facts. - Students are able to present, interpret, and discuss selected theories in regional and urban economics. - Students are able to apply and assess selected empirical methods in spatial economics. - Students are able to assess empirical tests of selected hypotheses from theories in regional and urban economics to evaluate and critically examine their informative value. - Students are able to discuss and evaluate regional political implications of selected economic theories in regional and urban economics. - Students will assess, evaluate and discuss selected recent research papers in English.
7	**Prerequisites**	Microeconomics, Econometrics I
8	**Integration in curriculum**	2. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects
10	**Method of examination**	L&E: Portfolio: 60-minutes written examination and a presentation within the lecture time; the exam has to be passed separately
11	**Grading procedure**	Portfolio (100%)
12	**Module frequency**	Annually in the summer term
13	**Workload**	Presence: 60 h Independent study: 90 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Brakman, S., H. Garretsen and C. van Marrewijk (2010). An Introduction to Geographical Economics. Cambridge University Press. Cambridge, UK, 2nd Ed. Fujita, M. and J.-F. Thisse (2002). Economics of Agglomeration. Cities, Industrial Location, and Regional Growth. Cambridge University Press. Cambridge, UK. Selected articles from the Duranton, G., J. V. Henderson and W. C. Strange, eds. (2015). Handbook of Regional & Urban Economics - Volume 5, Elsevier, Amsterdam.

Module group: Public Economics

1	**Module name** MSE-6410	**Taxation and labor supply**	5 ECTS
2	Courses/lectures	L: Taxation and labor supply (2 semester hours) E: Taxation and labor supply (2 semester hours)	2,5 ECTS 2,5 ECTS
3	Lecturers	Prof. Büttner and assistants	

4	**Module coordinator**	Prof. Büttner
5	**Contents**	The course is concerned with the effects of taxation and welfare programs on the labor supply of private households from a theoretical as well as an empirical perspective. The lecture covers implications for the supply of hours, participation decisions, and tax evasion. Various details of the tax system are considered including progressive income taxes and allowances, consumption taxes, and also welfare aid. Key contributions and controversies are reviewed and also recent approaches to empirical testing and identifying tax effects in the data are discussed.
6	**Learning objectives and skills**	Students are able to apply the economic decision model to questions of household taxation and to analyse the consequences of key features of the tax system on labour supply decisions including hours and participation. Students understand, how the microeconomic theory can be used to make quantitative assessments of tax systems and to analyse the main empirical results and studies which are used in the current policy studies. Moreover, they are acquainted with new econometric approaches to study effects of taxation on labour supply decisions.
7	**Prerequisites**	Microeconomics
8	**Integration in curriculum**	2. semester
9	**Module compatibility**	Master Economics (für Studierende mit Studienbeginn ab WS 15/16): Elective compulsory subjects Master Economics (für Studierende mit Studienbeginn vor WS 15/16): Wahlbereich (MSE-5970) Master FACT: Vertiefungs- und Ergänzungsbereich (MSE-3982) Master Arbeitsmarkt und Personal: Wahlbereich
10	**Method of examination**	Lecture and exercise: written examination (90 minutes)
11	**Grading procedure**	Written examination (100%)
12	**Module frequency**	Annually in the summer term
13	**Workload**	Presence: 60 h Independent study: 90 h Lecture notes are provided at the beginning of the course.
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Prescott, E. C., (2004), Why do Americans work so much more than Europeans, Federal Reserve Bank of Minneapolis Quarterly Review, 28, 2-13. http://www.minneapolisfed.org/research/QR/QR2811.pdf

Module group: Public Economics

1	**Module name** MSE-3984	**Taxation of capital income**	**5 ECTS**
2	Courses/lectures	L: Taxation of capital income (2 semester hours) E: Taxation of capital income (2 semester hours)	2,5 ECTS 2,5 ECTS
3	Lecturers	Prof. Büttner and assistants	

4	**Module coordinator**	Prof. Büttner
5	**Contents**	This course is concerned with the effects of various forms of capital income taxation on decisions of companies. Building on a consistent theoretical model of the firm, we discuss the implications of relevant taxes at the level of the firm and at the level of shareholder for financing and investment decisions. Each of the theoretical predictions is contrasted with the empirical evidence provided in the literature. While the main part of the lecture deals with an intertemporal model of firm decisions, the last part discusses how tax effects change under conditions of capital mobility.
6	**Learning objectives and skills**	Students know how to analyze and assess the economic consequences of capital income and business taxation using microeconomic decision models. They can use this framework to evaluate tax policy measures and tax reform proposals and understand how to analyze and assess the key issues in the field of company taxation. They are acquainted with the main empirical approaches to test and quantify the effects of taxation on investment and finance and can discuss the key findings in the empirical literature. Moreover, they know how the effects of capital income taxation differ under conditions of capital mobility including FDI and portfolio capital mobility.
7	**Prerequisites**	Microeconomics
8	**Integration in curriculum**	3. semester
9	**Module compatibility**	Master Economics (für Studierende mit Studienbeginn ab WS 15/16): Elective compulsory subjects Master Economics (für Studierende mit Studienbeginn vor WS 15/16): Wahlbereich (MSE-3981) Master FACT: Vertiefungs- und Ergänzungsbereich (MSE-3983)
10	**Method of examination**	Lecture and exercise: written examination (90 minutes)
11	**Grading procedure**	Written examination (100%)
12	**Module frequency**	Annually in the winter term
13	**Workload**	Presence: 60 h Independent study: 90 h Lecture notes are provided at the beginning of the course.
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Keuschnigg, C. (2005), Öffentliche Finanzen: Einnahmenpolitik, Mohr Siebeck, Kapitel XI. Auerbach, A. J. (2008), Taxation of corporate profits. The New Palgrave Dictionary of Economics. Second Edition.

Module group: Energy Markets

1	**Module name** MSE-8050	**Advanced industrial organization**	**5 ECTS**
2	Courses/lectures	L: Advanced industrial organization (2 SWS) E: Advanced industrial organization (1 SWS)	2,5 ECTS 2,5 ECTS
3	Lecturers	Prof. Zöttl	

4	**Module coordinator**	Prof. Zöttl
5	**Contents**	The goal of this course is to analyze topics that are important for an understanding of decision-making and firm behavior. Besides standard concepts such as price competition, product choice and market power, the course takes on topics such as free entry, switching costs, specific forms of price differentiation and bundling, asymmetric information, tying and platform markets. The integration of real-world cases in the course permits to focus on novel issues, such as competition policy in network markets, platform design, as well as pricing under asymmetric information.
6	**Learning objectives and skills**	Students then know how to model and analyze specific problems arising in the organization of different industries. They are able to connect real-world cases with the tools obtained in class and are able to propose own solution concepts for the situations considered.
7	**Prerequisites**	Solid knowledge in microeconomics, especially game theory (as taught in Bachelorprogrammes)
8	**Integration in curriculum**	3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master Arbeitsmarkt und Personal: Wahlbereich Master Sozialökonomik: Vertiefungsbereich Master FACT: Vertiefungs- und Ergänzungsbereich Master Management: Vertiefungsbereich
10	**Method of examination**	Lecture & Exercise: Written examination (90 minutes)
11	**Grading procedure**	Lecture & Exercise: Written examination (100%). Students can improve their grade through a written assignment which then accounts for 20% of the grade.
12	**Module frequency**	Annually in the winter term
13	**Workload**	Presence: 30 h Independent Study: 120 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	English
16	**Recommended reading**	Belleflamme/Peitz (2010, 1. Auflage), *Industrial Organization: Markets and Strategies,* Cambridge University Press, ISBN 978-0-521-68159-9.

Module group: Energy Markets

1	**Module name** MSE-2971	**Linear optimization**	**5 ECTS**
2	Courses/lectures	L: Linear and combinatorial optimization (4 weekly lecture hours during the second half of the term) E: Linear and combinatorial optimization (2 weekly lecture hours during the second half of the term)	5 ECTS
3	Lecturers	Prof. Martin, other lecturers of the Mathematics department possible	

4	**Module coordinator**	Prof. Martin Email: alexander.martin@fau.de
5	**Contents**	The main focus of this lecture is on the theory and solution of linear optimization problems. We will address geometric aspects of linear programming, duality, model creation and sensitivity analysis. This course also covers the Simplex Method for solving linear programs.
6	**Learning objectives and skills**	Students will • autonomously recognize and analyze problems in linear optimization, • discuss basic algorithmic concepts and apply them systematically, • classify methods of this field of study, • gather and assess relevant information and set it in context.
7	**Prerequisites**	Linear Algebra
8	**Integration in curriculum**	3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects
10	**Method of examination**	Portfolio: • Homework (one exercise sheet per week) • Oral examination (15 minutes)
11	**Grading procedure**	Oral examination (100 %)
12	**Module frequency**	Annually in the winter term, in Erlangen Südgelände (from winter term 2016/17)
13	**Workload**	Presence: 45 h Independent study: 105 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	German
16	**Recommended reading**	• Lecture notes • Schrijver: Combinatorial Optimization, Springer 2003 • Chvátal: Linear Programming, W.H. Freeman & Co, 1983

Module group: Energy Markets

1	**Module name** MSE-2972	**Combinatorial optimization**	**5 ECTS**
2	Courses/lectures	L: Linear and combinatorial optimization (4 weekly lecture hours during the first half of the term) E: Linear and combinatorial optimization (2 weekly lecture hours during the first half of the term)	5 ECTS
3	Lecturers	Prof. Martin, other lecturers of the Mathematics department possible	

4	**Module coordinator**	Prof. Martin Email: alexander.martin@fau.de
5	**Contents**	The main focus of this lecture is on the theory and solution of combinatorial optimization problems. We will address typical problems in graph theory like the Shortest Path Problem, the Spanning Tree or the Max-Flow Min-Cut Theorem. This course also covers basic algorithmic concepts such as Sorting, Greedy algorithm, Depth-first search/Breadth-first search and heuristics.
6	**Learning objectives and skills**	Students will • autonomously recognize and analyze problems in combinatorial optimization, • discuss basic algorithmic concepts and apply them systematically, • classify methods of this field of study, • gather and assess relevant information and set it in context.
7	**Prerequisites**	Linear Algebra
8	**Integration in curriculum**	3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects
10	**Method of examination**	Portfolio: • Homework (one exercise sheet per week) • Oral examination (15 minutes)
11	**Grading procedure**	Oral examination (100 %)
12	**Module frequency**	Annually in the winter term, in Erlangen Südgelände (from winter term 2016/17)
13	**Workload**	Presence: 45 h Independent study: 105 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	German
16	**Recommended reading**	• Lecture notes • Schrijver: Combinatorial Optimization, Springer 2003 • Korte/Vygen: Combinatorial Optimization, Springer 2005

Module group: Energy Markets

1	**Module name** MSE-2980	**Methods and applications of mathematical optimization**	**5 ECTS**
2	Courses/lectures	L: Methods and applications of mathematical optimization (2 weekly lecture hours) E: Methods and applications of mathematical optimization (1 weekly lecture hour)	5 ECTS
3	Lecturers	Prof. Liers, Prof. Schmidt and further lecturers from the Department of Mathematics	

4	**Module coordinator**	Prof. Liers, frauke.liers@fau.de
5	**Contents**	The focus of this module is on methods for modelling and solving optimization problems as they occur in the field of industry and economics. Advantages and disadvantages of different modelling techniques will be outlined and different reformulations will be presented in order to achieve efficient solution approaches. Students will learn how to present optimization results properly as well as how to interpret and evaluate these results for practical applications. This module covers topics such as optimization of transport networks (gas, water, energy), mathematical modelling and optimization techniques for market mechanisms in the energy sector and dealing with uncertain data.
6	**Learning objectives and skills**	The students • will gain an overview over applications of mathematical optimization • learn mathematical optimization modeling and solution techniques • learn to decide which solution approaches are suitable for which class of models
7	**Prerequisites**	Linear and Combinatorial Optimization
8	**Integration in curriculum**	3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects
10	**Method of examination**	• Homework (one worksheet per week) • Written examination (90 minutes) or oral examination (15 minutes)
11	**Grading procedure**	Written examination (100%)
12	**Module frequency**	Annually in the winter term (from winter term 2016/17)
13	**Workload**	Presence: 45 h Independent study: 105 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	German
16	**Recommended reading**	• Lecture Notes • Recent research literature

Module group: Energy Markets

1	**Module name** MSE-2591	**Quantitative methods in energy market modelling**	**5 ECTS**
2	Courses/lectures	Lecture: Quantitative methods in energy market modelling (2 SWS) Exercise: Quantitative methods in energy market modelling (1 SWS)	5 ECTS
3	Lecturers	Prof. Zöttl	

4	**Module coordinator**	Prof. Zöttl
5	**Contents**	It is the purpose of the course to understand and quantitatively analyse the economic interaction of the players and institutions in liberalized energy markets. Liberalized electricity markets can be segmented in a regulated part (the networks) and the non-regulated parts (generation and retail) where private companies interact in a market environment. The interaction of the different agents is analysed with computational equilibrium frameworks based the concepts applied in industrial organization. Next to the fundamental understanding of the relevant market interaction, the models allow for a quantitative analysis of proposals for the design of energy markets. The participants thus develop the tools for an autonomous assessment of currently discussed policies in liberalized electricity markets (e.g. changed support schemes for renewables, changed network tariff systems, impact of capacity markets). The course aims at students in the field of economics /business as well as students in the fields of engineering and mathematics. An integral part of the course id formed by homework assignments conducted in groups. The ability to cooperate also beyond the classical limits of each discipline is an important qualification for the students' careers, which should be stimulated in the context of this course.
6	**Learning objectives and skills**	The students: - develop a clear picture of the relevant market participants in liberalized electricity markets and understand their incentives and objectives - learn fundamental concepts and models which allow to analyze the interaction at those markets - get to know important publically available data sources which allow for a quantitative analysis of the market situations considered - know the current challenges when designing those markets and can quantitatively analyze the solutions proposed in the current policy debate.
7	**Prerequisites**	The students should be familiar with the mathematical methods acquired during their Bachelor degree. Institutional knowledge of electricity markets is not required.
8	**Integration in curriculum**	2. semester.

9	**Module compatibility**	Master Economics (für Studierende mit Studienbeginn ab WS 15/16): Elective compulsory subjects Master Economics (für Studierende mit Studienbeginn vor WS 15/16): Wahlbereich VWL (MSE-2590) Master Engineering Master Mathematics
10	**Method of examination**	Written Examination
11	**Grading procedure**	Written examination (100%). Students can improve their grade through a written assignment which then accounts for 20% of the grade.
12	**Module frequency**	The course takes place during the summer term (SS)
13	**Workload**	Presence: 30h Independent study: 120h
14	**Module duration**	The module duration is 1 semester. To facilitate participation of students from the faculties of science and engineering the lectures will be condensed (ca. 5 appointments)
15	**Teaching and examination language**	English
16	**Recommended reading**	- Daniel Kirschen and Goran Strbac: Power System Economics, Wiley 2004. - Steven Stoft: Power System Economics, Wiley 2002. - Wolfgang Ströbele, Wolfgang Pfaffenberger, Michael Heuterkes: Energiewirtschaft, Oldenbourg 2010.

Module group: Energy Markets

1	**Module name** MSE-2990	**Seminar energy markets**	**5 ECTS**
2	Courses/lectures	Seminar energy markets	5 ECTS
3	Lecturers	Prof. Grimm, Prof. Zöttl and assistants	

4	**Module coordinator**	Prof. Grimm and Prof. Zöttl
5	**Contents**	It is the purpose of the seminar to deepen the understanding of the economic interaction of the players and institutions in liberalized energy markets. The participants learn and develop the tools for an autonomous economic assessment of currently discussed policies in liberalized electricity markets (e.g. changed support schemes for renewables, changed network tariff systems, impact of capacity markets). In cooperation with experts from the industry, students are also confronted with the practitioners' perspective which requires a more detailed application of the economic concepts employed. The course aims at students in the field of economics /business as well as students in the fields of engineering and mathematics. In the final workshop, all Students present and mutually discuss their results together with practitioners from the industry. The ability to communicate also beyond the classical limits of each discipline is an important qualification for the students' careers, which should be stimulated in the context of this seminar.
6	**Learning objectives and skills**	The students - learn fundamental concepts and models which allow to analyze the economic interaction at energy markets, - Learn to autonomously apply those methods, - Conceptualize coherent analysis of current policy discussion of how to design energy markets, - In close exchange with a practitioner from industry, learn to apply in meaningful way the conceptual analysis and discussions to real world problems. - Develop their presentation skills.
7	**Prerequisites**	The students should be familiar with the mathematical methods acquired during their Bachelor degree. Institutional knowledge of energy markets is helpful but not required.
8	**Integration in curriculum**	2. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects Master Sozialökonomik: freier Vertiefungsbereich
10	**Method of examination**	Portfolio: Seminar paper and presentation; participation in discussion
11	**Grading procedure**	Portfolio (100%)
12	**Module frequency**	Annually in the summer term (from summer term 2016)
13	**Workload**	Presence: 45 h Independent study: 105 h

14	**Module duration**	1 semester
15	**Teaching and examination language**	German or English
16	**Recommended reading**	- Daniel Kirschen and Goran Strbac: Power System Economics, Wiley 2004. - Steven Stoft: Power System Economics, Wiley 2002. - Wolfgang Ströbele, Wolfgang Pfaffenberger, Michael Heuterkes: Energiewirtschaft, Oldenbourg 2010.

Module group: Energy Markets

1	**Module name** MSE-3180	**Mathematical optimization for communications & signal processing**	**5 ECTS**
2	Courses/lectures	Lecture: (2 SWS), Exercise (1 SWS)	5 ECTS
3	Lecturers	Prof. Liers, further lecturers from the Department of Mathematics	

4	**Module coordinator**	Prof. Liers
5	**Contents**	The focus of this module is on methods for modeling and solving optimization problems as they occur in the field communication and signal processing. Starting from practical applications, different classes of optimization problems are introduced that include linear, mixed-integer linear, continuous non-linear as well as mixed-integer non-linear optimization problems. Advantages and disadvantages of different modeling techniques will be outlined and different reformulations will be presented in order to achieve efficient solution approaches. Students will learn how to present optimization results properly as well as how to interpret and evaluate these results for practical applications in communications and signal processing.
6	**Learning objectives and skills**	The students - have an overview over mathematical optimization in practice - apply mathematical optimization modeling and solution techniques - decide which solution approaches are suitable for which class of models - know available software and how to use it
7	**Prerequisites**	A bachelor course in Mathematics for Engineers. Recommended are 3-4 courses in Mathematics for Engineers.
8	**Integration in curriculum**	3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects
10	**Method of examination**	Written examination (90min)
11	**Grading procedure**	Written examination (100%)
12	**Module frequency**	Annually in the winter term
13	**Workload**	Presence: 45 h Independent study: 105 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	Teaching is in English only. In the exam, each student can choose between English and German.
16	**Recommended reading**	

Module group: Energy Markets

1	**Module name** MSE-4340	**Seminar Optimierung in Energiemärkten** (Seminar optimiziation in energy markets)	**5 ECTS**
2	Courses/lectures	Seminar Optimierung in Energiemärkten (2 SWS)	5 ECTS
3	Lecturers	Prof. Liers, Prof. Martin	

4	**Module coordinator**	Prof. Liers
5	**Contents**	Die aktuell angebotenen Themen warden von den Dozenten rechtzeitig bekannt gegeben.
6	**Learning objectives and skills**	Die Studierenden - Erarbeiten sich vertiefende Fachkompetenzen im Bereich der Optimierung von Energiemärkten; - Analysieren Fragestellungen und Probleme im Bereich der Optimierung von Energiemärkten und lösen diese mit wissenschaftlichen Methoden; - Verwenden relevante Präsentations- und Kommunikationstechniken und präsentieren die mathematischen Sachverhalte in mündlicher und schriftlicher Form; - Tauschen sich untereinander und mit dem Dozenten über Informationen, Ideen, Probleme und Lösungen auf wissenschaftlichem Niveau aus.
7	**Prerequisites**	lineare und kombinatorische Optimierung
8	**Integration in curriculum**	3. semester
9	**Module compatibility**	Master Economics: Elective compulsory subjects
10	**Method of examination**	Portfolio: Präsentation 90 Minuten (75%) Präsentationspapier 5-10 Seiten (25%)
11	**Grading procedure**	Portfolio (100%)
12	**Module frequency**	Annually in the winter term
13	**Workload**	Presence: 45 h Independent study: 105 h
14	**Module duration**	1 semester
15	**Teaching and examination language**	Deutsch oder Englisch
16	**Recommended reading**	

Module group: Health Economics

1	**Module name** MSE-2162	**Applied empirical health economics**	**5 ECTS**
2	Courses/lectures	S: Projektseminar: Angewandte empirische Gesundheitsökonomie (3 SWS)	5 ECTS
3	Lecturers	Prof. Tauchmann and assistants	

4	**Module coordinator**	Prof. Tauchmann
5	**Contents**	Das Projektseminar soll an die angewandte empirische Forschung im Bereich der Gesundheitsökonomik heranführen und folgt dabei dem Lehrbuch Jones et al. (2007); „Applied Health Economics“. Die einzelnen Kapitel des Buches behandeln jeweils eine Fragestellung der empirischen Gesundheitsökonomik, wie z.B. „Inequality in health“ wobei im Vordergrund steht, wie Methoden der empirischen Wirtschaftsforschung und Ökonometrie (z.B. verallgemeinerte Lorenzkurven, Probitregression für geordnete Kategorien, Intervallregression) für die Auseinander-setzung mit der jeweiligen Fragestellung verwendet und mit der Software Stata® praktisch angewendet werden können. Die TeilnehmerInnen des Projektseminars übernehmen jeweils ein Kapitel des Lehrbuches, und arbeiten selbständig (aber mit Unterstützung) im PC-Pool an ihrem Thema. Optional wird im Vorfeld ein Stata® Crashkurs angeboten, mit dem Stata-Kenntnisse erworben, aufgefrischt und vertieft werden können. Die TeilnehmerInnen schreiben eine Seminararbeit, in der sie ihr Vorgehen und Ihre Ergebnisse dokumentieren, und stellen diese in einem Blockseminar vor.
6	**Learning objectives and skills**	Die Studierenden • lernen für konkrete Fragestellungen der empirischen Gesundheitsökonomik relevante Methoden kennen und anzuwenden, bzw. vertiefen ihre in anderen Veranstaltungen erworbene Methodenkompetenz • erwerben die Kompetenz, eigenständig Forschungsfragen der empirischen Gesundheitsökonomie zu bearbeiten • lernen empirische Forschungsergebnisse darzustellen und zu diskutieren
7	**Prerequisites**	• solide Grundkenntnisse in Mikroökonometrie • Grundkenntnisse der ökonometrischen Software Stata® (zu Beginn der Veranstaltung wird optional ein Stata® Blockkurs angeboten, der auch ohne Stata-Vorkenntnisse zur erfolgreichen Teilnahme befähigen sollte) • Grundkenntnisse in Gesundheitsökonomik
8	**Integration in curriculum**	3. semester
9	**Module compatibility**	Master Economics (für Studierende mit Studienbeginn ab WS 15/16): Elective compulsory subjects Master Economics (für Studierende mit Studienbeginn vor WS 15/16): Wahlbereich VWL (MSE-2200) Master Gesundheitsmanagement und Gesundheitsökonomie:

		Wahlbereich (MiGG-2161) Master Management: Vertiefungsbereich (MiGG-2161) Master Arbeitsmarkt und Personal: Wahlbereich (MiGG-2161) Master Sozialökonomik: freier Vertiefungsbereich (MiGG-2161)
10	**Method of examination**	Präsentation und Seminararbeit
11	**Grading procedure**	S: 35% Präsentation, 65% Seminararbeit
12	**Module frequency**	Jährlich im Wintersemester
13	**Workload**	Präsenzzeit: 30 h Eigenstudium: 120 h
14	**Module duration**	Stata Blockkurs, Blockseminar (1 Semester)
15	**Teaching and examination language**	Deutsch / Englisch
16	**Recommended reading**	Jones A., Rice, N. Bago d'Uva, T. & Balia, S. (2007): Applied Health Economics, Routledge.

Module group: Health Economics

	Module name MiGG-6792	**The economics of health insurance**	**5 ECTS**
1	Courses/lectures	L & E: The economics of health insurance	5 ECTS
2	Lecturers	Dr. Lenz and Assistants	

3	**Module coordinator**	Prof. Tauchmann
4	**Contents**	The course covers the economics of health care taking a microeconomic perspective. The course focusses on the market for health insurance and its imperfections that originate from the specific characteristics of health as a commodity and result in market failure and hence undesirable market outcomes such as adverse selection, moral hazard, and risk selection. Based on the theoretical analysis implications for the question of how to design a health (insurance) system are derived.
5	**Learning objectives and skills**	The students • learn to analyze the market for health insurance • acquire knowledge about the institutions of the German health insurance system and how to assess them from a theoretical perspective • test the theoretical predictions using empirical analyses
6	**Prerequisites**	Solid skills in microeconomics, basic skills in econometrics
7	**Integration in curriculum**	2. semester
8	**Module compatibility**	Master Economics (für Studierende mit Studienbeginn ab WS 15/16): Elective compulsory subjects Master Arbeitsmarkt und Personal: Wahlbereich Master Sozialökonomik: freier Vertiefungsbereich oder in Bereich „Spezielle VWL“ Master Wirtschaftspädagogik, Studienrichtung I: Wahlbereich Master Management: Vertiefungsbereich Master Economics (für Studierende mit Studienbeginn vor WS 15/16): Wahlbereich (cannot be combined with the equivalent German langue module “Gesundheitsökonomie I (Health Economics I)”
9	**Method of examination**	90-minute written exam (100%).
10	**Grading procedure**	Written examination (100 %)
11	**Module frequency**	Annually in the summer term
12	**Workload**	Presence: 45 h Independent study: 105 h
13	**Module duration**	Weekly 90 min. lecture and fortnightly 90 min. exercise class over the lecture period (1 semester)
14	**Teaching and examination language**	English
15	**Recommended reading**	Zweifel, P., Breyer, F., Kifmann, M. (2009): Health Economics, Springer 2nd ed.

Module group: Health Economics

1	**Module name** MiGG-2153	**The supply of medical services**	**5 ECTS**
2	Courses/lectures	L & E: Das Angebot medizinischer Leistungen (3SWS)	5 ECTS
3	Lecturers	Dr. Lenz und Assistierende	

4	**Module coordinator**	Prof. Tauchmann
5	**Contents**	In der Vorlesung werden Märkte für medizinische Leistungen und insbesondere das Angebot solcher Leistungen durch Ärzte und Krankenhäuser betrachtet. Der Schwerpunkt der Analyse liegt auf der Analyse der Verhaltensanreize, die von den Besonderheiten des Gutes Gesundheit und der Ausgestaltung des Gesundheitssystems ausgehen. Dabei werden Themen wie „angebotsinduzierte Nachfrage nach Gesundheitsleistungen“, „Qualität und Menge im Krankenhaus“ und „optimale Ausgestaltung von Vergütungssystemen“ betrachtet. Daneben setzt sich die Veranstaltung mit individuellem Gesundheitsverhalten auseinander. Die Studierenden sollten die Bereitschaft mitbringen, sich vertieft mit mikroökonomischen Modellen zu beschäftigen.
6	**Learning objectives and skills**	Die Studierenden • erwerben ein mikroökonomisches Verständnis des Verhaltens der Akteure in den Märkten für medizinische Leistungen • sind in der Lage, staatliche Regulierung Eingriffe in diese Märkte zu bewerten • erwerben eine solide Basis um an der Diskussion um die Reform des deutschen Gesundheitswesens teilzunehmen
7	**Prerequisites**	Solide Kenntnisse in Mikroökonomik, Grundkenntnisse in Ökonometrie
8	**Integration in curriculum**	2. Semester
9	**Module compatibility**	Master Economics (für Studierende mit Studienbeginn ab WS 15/16): Elective compulsory subjects Master Economics (für Studierende mit Studienbeginn vor WS 15/16): Wahlbereich VWL (MiGG-2151) Master Gesundheitsmanagement und Gesundheitsökonomie: Wahlbereich (MiGG-2151) Master Management: Vertiefungsbereich (MiGG-2151) Master Sozialökonomik: sozialökonomischer Vertiefungsbereich oder freier Vertiefungsbereich (MiGG-2151) -Master Arbeitsmarkt und Personal: Wahlbereich (MiGG-2151)

		Master Wirtschaftspädagogik, Studienrichtung I: Wahlbereich (MiGG-2151)
10	**Method of examination**	Klausur (90 Min.)
11	**Grading procedure**	Klausur (100%)
12	**Module frequency**	Jährlich im Sommersemester
13	**Workload**	Präsenzzeit: 45 h Eigenstudium: 105 h
14	**Module duration**	1 Semester
15	**Teaching and examination language**	Deutsch
16	**Recommended reading**	Zweifel, P., Breyer, F., Kifmann, M. (2013): Gesundheitsökonomik, Springer Gabler, 6. Aufl.

Module group: Health Economics

1	**Modulbezeichnung** MiGG-4821	**Gesundheitsökonomische Evaluationen I** (Health economic evaluations I)	**5 ECTS**
2	Lehrveranstaltungen	S: Gesundheitsökonomische Evaluationen I	5 ECTS
3	Dozentin bzw. Dozent	Prof. Schöffski und Mitarbeitende	

4	**Modulverantwortliche(r)**	Prof. Schöffski
5	**Inhalt**	Bei allen öffentlichen Großprojekten sind Kosten-Nutzen-Analysen zwingend vorgeschrieben. Die Methodik wurde im Gesundheitswesen weiter entwickelt, wo auch „intangible“ Effekte (z.B. Lebensqualität) berücksichtigt werden müssen. In der Veranstaltung werden die unterschiedlichen Studienformen, die Grundprinzipien, das Design von gesundheitsökonomischen Studien und insbesondere das QALY- und das Effizienzgrenzenkonzept behandelt.
6	**Lernziele und Kompetenzen**	Die Studierenden - ermessen den Unterschied zwischen Effektivität und Effizienz im Gesundheitswesen - diskutieren verschiedene Möglichkeiten der Berechnung von Kosten und Nutzen medizinischer Maßnahmen und setzen Kosten und Nutzen verschiedener medizinischer Maßnahmen zueinander in Beziehung - beurteilen aktuelle Diskussionen zu dieser Thematik - vergleichen die verschiedenen Grundformen und -prinzipien gesundheitsökonomischer Evaluationen sowie die damit verbundenen Konzepte - schätzen das QALY-Konzept im Hinblick auf seine Relevanz ein - skizzieren das Design einer gesundheitsökonomischen Studie
7	**Empfohlene Voraussetzungen für die Teilnahme**	Keine
8	**Einpassung in Musterstudienplan**	2. Semester
9	**Verwendbarkeit des Moduls**	Master Gesundheitsmanagement und Gesundheitsökonomie: Pflichtbereich Master Management: Pflichtbereich II (MIM-4820) Master Economics: Elective compulsory subjects
10	**Studien- und Prüfungsleistungen**	60 min. Klausur
11	**Berechnung Modulnote**	Klausur (100 %)
12	**Turnus des Angebots**	Jährlich im SS
13	**Arbeitsaufwand**	Präsenzzeit: 45 h Eigenstudium: 105 h
14	**Dauer des Moduls**	1 Semester
15	**Unterrichtssprache**	Deutsch
16	**Vorbereitende Literatur**	Schöffski / Graf von der Schulenburg (Hrsg.): Gesundheitsökonomische Evaluationen, 3. oder 4. Aufl., Berlin u. a., 2007, 2008 oder 2012.

Module group: Health Economics

1	**Modulbezeichnung** MiGG-2850	**Gesundheitsökonomische Evaluationen II** (Health economic evaluations II)	**5 ECTS**
2	Lehrveranstaltungen	S: Gesundheitsökonomische Evaluationen II	5 ECTS
3	Dozentin bzw. Dozent	Prof. Schöffski und Mitarbeitende	

4	**Modulverantwortliche(r)**	Prof. Schöffski
5	**Inhalt**	Die Thematik wird in dieser Veranstaltung aufbauend auf der Grundlagenveranstaltung im 1. Semester weiter vertieft. Insbesondere werden hier die Methoden der Lebensqualitätsmessung behandelt und kritisch diskutiert. Weiterhin werden Modellierungen in Form von Entscheidungsbäumen und Markov-Modellen theoretisch und praktisch durchgeführt. Fallbeispiele runden diese Veranstaltung ab.
6	**Lernziele und Kompetenzen**	Die Studierenden - verstehen die Problematik und die Relevanz der Messung von Lebensqualitätseffekten - können entsprechende Lebensqualitätsmessungen eigenständig durchführen - sind in der Lage verschiedene Modellierungsansätze beurteilen zu können - können einfache Modellierungen selbst konzipieren, durchführen und die Ergebnisse interpretieren.
7	**Empfohlene Voraussetzungen für die Teilnahme**	Die Pflichtveranstaltung Gesundheitsökonomische Evaluationen I sollte vor diesem Modul belegt worden sein.
8	**Einpassung in Musterstudienplan**	3. Semester
9	**Verwendbarkeit des Moduls**	Master Gesundheitsmanagement und Gesundheitsökonomie: Pflichtbereich Master Management: Vertiefungsbereich Master Economics: Elective compulsory subjects
10	**Studien- und Prüfungsleistungen**	Klausur (60 Min.)
11	**Berechnung Modulnote**	Klausur (100 %)
12	**Turnus des Angebots**	Jährlich im WS
13	**Arbeitsaufwand**	Präsenzzeit: 45 h Eigenstudium: 105 h
14	**Dauer des Moduls**	1 Semester
15	**Unterrichtssprache**	Deutsch
16	**Vorbereitende Literatur**	Schöffski / Graf von der Schulenburg (Hrsg.): Gesundheitsökonomische Evaluationen, 3. oder 4. Aufl., Berlin u. a., 2007, 2008 oder 2012.

Free elective modules

Up to 2 free elective modules worth 5 ECTS credits each may be taken. These are modules offered by the Faculty. When choosing modules, a subject-specific increase in expertise compared to the preceding Bachelor's degree must be proven. The programme coordinator must approve the suitability of the proposed courses.
An overview on the available modules can be found here: https://www.campus.uni-erlangen.de/stgstruct/ Master of Science (65) Economics (636) PO-Version: 20152 / 1860 Miscellaneous.
Languages as free elective modules: One course independent of level. Second course must be of level B2 or higher.

Master's thesis

1	**Module name** MSE-1997	**Master's thesis**	**30 ECTS**
2	Courses/lectures	Master's thesis (0 SWS) S: Master's thesis seminar (2 SWS)	25 ECTS 5 ECTS
3	Lecturers	All professors of the Master in Economics	

4	**Module coordinator**	All professors of the Master in Economics
5	**Contents**	EN: Students write their master's thesis. In the seminar students present and discuss their master's thesis. DE: Die Studierenden erstellen Ihre Masterarbeit. Im Rahmen des Seminars präsentieren und diskutieren die Studierenden ihre Masterarbeiten.
6	**Learning objectives and skills**	EN: Master's thesis: In the master's thesis students show that they are able to work on a topic or an economic issue within a prescribed period independently and with scientific methods. They can prepare the findings concisely and interpret them competently. Master's thesis seminar: Students discuss their own and other contributions to economic research. The seminar should assist students in the preparation of the master's thesis and give them important support to the independent solution and presentation of issues. DE: Masterarbeit: In der Masterarbeit zeigen Studierende, dass sie in der Lage sind innerhalb einer vorgegebenen Frist ein Thema bzw. eine ökonomische Fragestellung selbständig und mit wissenschaftlichen Methoden zu bearbeiten sowie die Erkenntnisse prägnant aufzubereiten und kompetent zu interpretieren. Seminar zur Masterarbeit: Studierende diskutieren eigene und andere Beiträge zur volkswirtschaftlichen Forschung. Das Seminar soll die Studierenden bei der Anfertigung der Masterarbeit unterstützen und ihnen wichtige Hilfen zur selbständigen Lösung und Darstellung von Problemen geben.
7	**Prerequisites**	EN: Courses from the 1. – 3. semesters DE: Besuch der Veranstaltungen des 1. - 3. Semesters
8	**Integration in curriculum**	4. semester
9	**Module compatibility**	Master Economics
10	**Method of examination**	EN: Master's thesis: written thesis paper Master's thesis seminar: presentation of the master's thesis DE:

		Masterarbeit: Schriftliche Arbeit Seminar: Präsentation zur Masterarbeit
11	**Grading procedure**	EN: Master's thesis 25 ECTS Presentation and discussion in the seminar 5 ECTS DE: Masterarbeit 25 ECTS Präsentation und Diskussionsbeteiligung im Seminar 5 ECTS
12	**Module frequency**	EN: Master's thesis: flexible timing Master's thesis seminar: annually in the summer term DE: Masterarbeit: Angebot zeitlich flexibel Seminar zur Masterarbeit: Jährlich im Sommersemester
13	**Workload**	EN: Master's thesis: Independent study: 750 h Master's thesis seminar: Presence: 30 h Independent study: 120 h DE: Masterarbeit: Eigenstudium: 750 h Seminar zur Masterarbeit: Präsenzzeit: 30 h Eigenstudium: 120 h
14	**Module duration**	1 semester (6 months)
15	**Teaching and examination language**	German or English
16	**Recommended reading**	EN: Changing current research literature DE: Wechselnde aktuelle Forschungsliteratur