

Module Catalog for Compulsory Courses

B. Sc. Economics University of Mannheim



Credit: Anna Logue

Table of Contents

Analysis and Linear Algebra A.....	1
Public Finance.....	2
Mathematics of Finance	3
Introduction to Econometrics.....	4
Principles of Economics	5
International Economics.....	7
Macroeconomics A.....	9
Macroeconomics B	10
Microeconomics A.....	11
Microeconomics B	12
Civil and Commercial Law.....	14
Economic History.....	15
Economic Policy	16
Scientific Working.....	17
Statistics I.....	18
Statistics II.....	20

Analysis and Linear Algebra A

Form and usability of the module: compulsory course for B. Sc. Economics

Responsible teacher of the module: Steffen Habermalz, Ph.D.

Further instructors: teaching assistants for exercise classes

Cycle of offer: each fall semester

Duration: 1 semester

ECTS credits: 8

Teaching method (hours per week): lecture (3) and exercise (3)

Workload: 31.5 (lecture) and 31.5 (exercise) hours of time in class and 161 hours of independent study time and preparation for the exam

Course language: German

Prerequisites: none

Grading: exam (90 min.)

Expected number of students in class: approximately 220 students

Goals and contents of the module: The course introduces the most important mathematical methods of economics. The contents of the course include functions of multiple variables, partial derivatives, total differential, linear approximations, multivariate optimization, optimization under constraints, comparative static analysis, matrices and vector algebra, determinants and inverse matrices, linear independence, linear system of equations, introduction to integral calculus.

Expected competences acquired after completion of the module: After completing the module, students will be able to understand and explain what the learned methods (LaGrange method, approximation by differentials, and so on) are needed for and why and how they work. They understand the theoretical basics of learned methods and are able to answer theoretical questions. Moreover, they are able to perform simple proofs as well as to solve practical tasks. Students have expanded their mathematical argumentation skills.

Literature:

- Sydsæter, K., Hammond, P. J., Strøm, A., Carvajal, A., Böker, F. & Pearson Studium Verlag. (2023). Mathematik für Wirtschaftswissenschaftler: Basiswissen mit Praxisbezug (6., aktualisierte Auflage). München.
- Simon, C., & Blume, L. (1994). Mathematics for economists (First edition, international student ed.). New York London.

Public Finance

Form and usability of the module: compulsory course for B. Sc. Economics; compulsory and, if applicable, elective course in other bachelor's programs at the University of Mannheim

Responsible teacher of the module: Prof. Dr. Eckhard Janeba

Further instructors: teaching assistants for exercise classes

Cycle of offer: every spring semester

Duration: 1 semester

ECTS credits: 8

Teaching method (hours per week): lectures (3) + exercises (2)

Workload: time in class: lecture 31.5 hours, exercise 21 hours; 171.5 hours of independent study time and preparation for the exam

Course language: German

Prerequisites: Microeconomics A + B

Grading: final exam (135 minutes)

Expected number of students in class: lecture approx. 220 students, exercises approx. 50-55 students

Goals and contents of the module: The course introduces the topics of public finance, i.e. in particular the politics and theory of public expenditure and the theory and policy of taxation. Institutional foundations, theoretical models for the evaluation of state interventions as well as empirical reviews and applications are presented.

Expected competences after completion of the module: Students learn to understand and work on financial issues independently. The arguments are micro-founded throughout, so that the students have understood not only the results but also the principles of financial research and are thus able to apply these principles themselves on the basis of current political problems.

Mathematics of Finance

Mathematics of Finance is an export course of the Mannheim Business School.

The module description can be found in the module catalog “Foundations in Business Administration and Information Systems for Students of other fields of studies” via the following link:

https://www.bwl.uni-mannheim.de/media/Fakultaeten/bwl/Dokumente/Studium/Module_Catalog_Minor_Business.pdf

Introduction to Econometrics

Form and usability of the module: compulsory course for B. Sc. Economics; compulsory and, if applicable, elective course in other bachelor's programs at the University of Mannheim

Responsible teacher of the module: Prof. Dr. Carsten Trenkler

Further instructors: teaching assistants for exercise classes

Cycle of offer: every spring semester

Duration: 1 semester

ECTS credits: 6

Teaching method (hours per week): lecture (2) + exercise (2)

Workload: time in class: lecture 21 hours, exercise 21 hours; 126 hours of independent study time and preparation for the exam

Course language: German

Prerequisites: Statistics I + II

Grading: final exam (90 minutes)

Expected number of students in class: lecture approx. 220 students, exercises approx. 35-45 students

Goals and contents of the module: The course gives an introduction to the most important methods of econometrics. The multiple regression model, conditional expectation values and linear projections, KQ estimators and their properties, the basics of asymptotic theory, bias due to omitted variables, restriction tests, model specification, model diagnosis, perfect and imperfect multicollinearity, causality analysis, nonlinear modelling, IV-estimation and time series analysis are discussed. In addition to an introductory consideration of the theoretical aspects of the methods, their application is demonstrated, and the empirically relevant aspects are discussed. The lecture is accompanied by methodological and empirical exercises in the PC pool.

Expected competences after completion of the module: Students have acquired basic knowledge of econometrics and a basic understanding of empirical research. They are able to apply their specialist knowledge and understanding of methods to solve simple empirical problems using software programs and to interpret the corresponding results. Students can understand introductory and advanced textbooks in order to independently acquire further econometric and empirical methods.

Principles of Economics

Form and usability of the module: compulsory course for B. Sc. Economics; compulsory and, if applicable, elective course in other bachelor's programs at the University of Mannheim

Responsible teacher of the module: Steffen Habermalz, Ph.D.

Further instructors: Dr. Alexander Donges (coordination exercises), teaching assistants for exercise classes

Cycle of offer: each fall semester

Duration: 1 semester

ECTS credits: 8

Teaching method (hours per week): lecture (4) and exercise (2)

Workload: 42 (lecture) and 21 (exercise) hours of time in class and 161 hours of independent study time and preparation for the exam

Course language: German

Prerequisites: none

Grading: written exam (120 minutes)

Expected number of students in class: lecture 1,200 participants in 3 groups and exercise 30 participants

Goals and contents of the module: This course is designed to introduce students to the principles of economic thinking. The contents of the course include:

Part 1 Microeconomics

- Introduction: a first approach; models and empirics; interdependence and trade benefits
- Supply, demand and the competition model: demand, supply and market equilibrium; elasticity and its applications; the market model in economic policy analysis; on the efficiency of markets
- Corporate decisions, market structure and market regulation: production function and production costs; companies in competitive markets; markets for production factors; monopoly, monopolistic competition and advertising; oligopoly and game theory
- Market failure and the state: information and individual behavior; externalities; public goods and social resources
- Trade and tax policy, distributional issues: international trade and trade policy; economic costs of taxation; the state and the design of the tax system; income and discrimination; income distribution and poverty

Part 2: Macroeconomics

- Measurement of macroeconomic variables: Gross domestic product (GDP); prices, inflation
- Long-term economic development: Growth and production; Capital: Saving and investment; Unemployment; Monetary system: Inflation; Open economy: Introduction
- Economic fluctuations: aggregate demand and supply; influence of monetary and fiscal policy; Phillips curve: Inflation vs. unemployment

Expected competences acquired after completion of the module: Successful graduates are familiar with the principles of economic thinking. They can apply these to analyze the effects of various simple economic policy measures and assess which effects are socially desirable. They can use their knowledge of the incentives at work in economic processes to provide laypersons with sound professional advice on moderately complex economic and political decision-making problems.

They are able to formulate specialist positions on current social problems (such as the economic and financial crisis) and discuss possible solutions with specialist representatives.

Literature: Mankiw, N., Taylor, M., Ashwin, A., Herrmann, M., Müller, C., & Pülpichhuysen, D. (2021). Grundzüge der Volkswirtschaftslehre (8., überarbeitet Auflage). Stuttgart Freiburg.

Optional: Mankiw, N., & Taylor, M. (2020). Economics (Fifth ed.). Andover.

International Economics

Form and usability of the module: compulsory course for B. Sc. Economics; compulsory and, if applicable, elective course in other bachelor's programs at the University of Mannheim

Responsible teacher of the module: Dr. Jan Simon Schymik

Further instructors: teaching assistants for exercise classes

Cycle of offer: each fall semester

Duration: 1 semester

ECTS credits: 6

Teaching method (hours per week): lecture (2) and practical exercise (2)

Workload: time in class 42 hours, independent study time and preparation for the exam 126 hours

Course language: English

Prerequisites: Microeconomics A, Macroeconomics A

Grading: written exam (90 minutes)

Expected number of students in class: lecture about 150 students; exercise class: about 35-40 students

Goals and contents of the module: The course gives an introduction to international economics. The covered material corresponds to the international standard for a course in international economics. The first half of the course covers core models of international trade, such as classical theories of comparative advantage (Ricardo and Heckscher-Ohlin) and trade models with scale economies (Krugman), and fundamentals of trade policy and the World Trade Organization. The second half of the course covers international macroeconomics. We will discuss the intertemporal approach to the current account, international capital flows, exchange rates, fiscal and monetary policy in open economies.

1. International Trade

- Introduction and facts about international trade
- The Ricardian model of international trade
- The Heckscher-Ohlin model
- Trade models with imperfect competition
- Trade policy and the WTO
- Foreign direct investment (FDI) and offshoring

2. International Macroeconomics

- The balance of payments
- Theories of international financial flows and the current account
- Short-run theories of exchange rates
- Long-run theories of exchange rates
- Fiscal and monetary policy in open economies
- Sovereign debt crisis/exchange rate crisis

Expected competences acquired after completion of the module: The student is acquainted with the core theories in international economics, as well as basic knowledge of the relevant international institutions. The student has learned to analyze and evaluate questions in international economics independently. The ability to analyze complex situations using analytical tools and logical thinking is increased.

Further information: Literature:

- Feenstra, R. C. & Taylor, A. M. (2021). International Economics (fifth edition).
- Krugman, P. R., Obstfeld, M. & Melitz, M. J. (2023). International Economics: Theory & Policy (twelfth edition, Global edition).
- Schmitt-Grohé, S., Uribe, M. & Woodford, M. (2022). International Macroeconomics: A Modern Approach.

Macroeconomics A

Form and usability of the module: compulsory course for B. Sc. Economics; compulsory and, if applicable, elective course in other bachelor's programs at the University of Mannheim

Responsible teachers of the module: Prof. Dr. Moritz Kuhn (German lecture) / Prof. Miren Azkarate-Askasua, Ph.D. (English lecture)

Further instructors: teaching assistants for exercise classes

Cycle of offer: each spring

Duration: 1 semester

ECTS credits: 8

Teaching method (hours per week): lectures (4) + exercises (2)

Workload: time in class: lecture 42 hours, exercise 21 hours, 161 hours of independent study time and preparation for the exam

Course language: Lectures and Exercises are offered in English and German.

Prerequisites: Analysis or Analysis und lineare Algebra A, recommended: Grundlagen der Volkswirtschaftslehre

Grading: final exam (120 min)

Expected number of students in class: English lecture 150, German lecture: 250, exercise 30-40 students

Goals and contents of the module: The course together with Macroeconomics B provides a comprehensive introduction to macroeconomics. Participants will become familiar with fundamental macroeconomic theories and learn how they are applied to economic policy issues. In addition, the main macroeconomic facts, and the empirical testing of the theories against these facts are discussed. The course Macroeconomics A focuses mainly on medium and long-run economic development (growth), while Macroeconomics B focuses on the short-run (business cycle).

Specific topics include:

1. Macroeconomic data
2. Economic growth
3. Microeconomic foundation
4. Saving and investment
5. Open economies
6. Aggregate demand: IS-LM model
7. Aggregate demand and aggregate supply: AS-AD model
8. Unemployment

Expected competences acquired after completion of the module: Students who successfully complete the course know the principles of macroeconomic thinking. They can apply these principles to analyze the effects of economic policies and to evaluate which effects are socially desirable. In addition, they can use their knowledge of the theory and empirics of macroeconomics to comment on macroeconomic issues in a professionally sound manner. Furthermore, they are able to formulate proposals for improving the overall economic situation and to discuss these proposals with economic experts.

Textbook: Mankiw, N. (2019), Macroeconomics (Tenth ed.), Macmillan international higher education, New York, NY.

Macroeconomics B

Form and usability of the module: compulsory course for B. Sc. Economics; compulsory and, if applicable, elective course in other bachelor's programs at the University of Mannheim

Responsible teachers of the module: Prof. Andreas Gulyas, Ph.D. (German lecture) / Prof. Ana Moreno-Maldonado, Ph.D. (English lecture)

Further instructors: teaching assistants for exercise classes

Cycle of offer: each fall semester

Duration: 1 semester

ECTS credits: 8

Teaching method (hours per week): lecture (3) and practical exercise (2)

Workload: time in class: 31.5 hours lecture and 21 hours exercise class, independent study time and preparation for the exam 171.5 hours

Course language: Lectures and Exercises are offered in English and German.

Prerequisites: We will draw heavily on the contents of the courses Analysis and Microeconomics A, Macroeconomics A recommended.

Grading: written exam (120 minutes)

Expected number of students in class: English lecture: 100 students, German lecture: 250, exercise class: 35-40 students

Goals and contents of the module: This course offers a micro-founded introduction to modern macro models of the business cycle, including a mathematical derivation of these models. The course will cover macroeconomic models of short run fluctuations (IS-LM, AS-AD, Phillips-curve). In addition, the effects of monetary and fiscal policy on output, unemployment and inflation will be studied. Further, the theory and welfare implications of inflation and time inconsistency of policy decisions are discussed.

Topics:

- A one-period model of the macro economy
- Savings and investment
- Money and business cycles
- Topics in banking

Expected competences acquired after completion of the module: The students can quantitatively estimate the effects of policy decision on macroeconomic outcomes. The presented models are also a useful guide to inform macroeconomic debates.

Further information: Literature: Williamson, S. (2018). Macroeconomics (Sixth edition, global ed., The Pearson series in economics). Harlow, England.

Both courses (German or English) cover essentially the same material and adopt the same book. Moreover, the exercise sessions on both languages will discuss the same problem sets. However, organizational details and grading will be determined by each instructor.

Microeconomics A

Form and usability of the module: compulsory course for B. Sc. Economics; compulsory and, if applicable, elective course in other bachelor's programs at the University of Mannheim

Responsible teacher of the module: Prof. Dr. Thomas Tröger (German lecture) / Prof. Dr. Martin Peitz (English lecture)

Further instructors: Dr. Alexander Donges (coordination exercises) / Robin Ng, Ph.D. / Anton Sobolev, Ph.D. / teaching assistants for exercise classes

Cycle of offer: each spring semester

Duration: 1 semester

ECTS credits: 8

Teaching method (hours per week): lecture (4) + exercise (2)

Workload: time in class: lecture 42 hours, exercise 21 hours; 161 hours of independent study time and preparation for the exam

Course language: Lectures and Exercises are offered in English and German.

Prerequisites: Analysis und Lineare Algebra A, Grundlagen der Volkswirtschaftslehre recommended

Grading: final exam (120 min)

Expected number of students in class: English lecture about 300, German lecture about 600 students, exercises: on average 20 students

Goals and contents of the module: The goal is to teach the functioning and the welfare properties of competitive markets. The emphasis is on the interdependence of different markets (general equilibrium) and the resulting insights into welfare economics. Towards these goals the topics of preference relations, consumer theory, decisions under uncertainty, intertemporal decisions, producer theory and taxation of goods are introduced. Partial equilibrium is developed as a special case of general equilibrium. The taught knowledge of theoretical methods gets practiced in numerous applications. The technical aspects are amplified, in particular in the tutorials and in problems solved in class. In contrast to the course Microeconomics B, the focus in Microeconomics A is on the analysis of non-strategic behavior. The knowledge obtained in Microeconomics A is essential for many advanced courses in economics and business administration.

Expected competences acquired after completion of the module: The students are able to move away from the individual point of view when analyzing social situations. Instead, they comprehend the interaction of individuals as an important factor, in particular in the context of interdependent markets, of decisions under uncertainty, and of decisions with delayed consequences. The students have learned to model economic problems as mathematical optimization problems under constraints and to think in terms of equilibria. After completing the course, the students are able to reproduce the obtained theoretical knowledge and to apply it to related problems. Furthermore, they have critically looked into the model of a competitive market and understand the assumptions that are necessary to make model applicable. The students are able to deepen their knowledge in advanced courses as well as in self-study. The small number of participants per tutorial facilitates the interaction between the students and the tutors. Through the enfolding discussions, the students improve their ability to take field-related positions and formulate arguments to defend these.

Further information: Literature:

- Robert S. Pindyck and Daniel S. Rubinfeld (2018). Microeconomics (9th edition), The Pearson series in economics. The 8th edition can still be used.
- Hal R. Varian (2014). Intermediate Microeconomics: A Modern Approach (9th Edition), Norton & Company.

Microeconomics B

Form and usability of the module: compulsory course for B. Sc. Economics; compulsory and, if applicable, elective course in other bachelor's programs at the University of Mannheim

Responsible teachers of the module: Prof. Volker Nocke, Ph.D. (German lecture) / Prof. Helena Perrone, Ph.D. (English lecture)

Further instructors: teaching assistants for exercise classes

Cycle of offer: each fall semester

Duration: 1 semester

ECTS credits: 8

Teaching method (hours per week): lecture (3) + exercise class (2)

Workload: 31.5 hours in lecture, 21 hours in exercise class and 171.5 hours of independent study time and preparation for the exam

Course language: Lectures and exercises are offered in English and German.

Prerequisites: Grundlagen der Volkswirtschaftslehre, Microeconomics A

Grading: final exam, 120 min

Expected number of students in class: English lecture: 100 students, German lecture: 300 students, exercise classes: 35-40 students

Goals and contents of the module: This course covers sources of market failure and provides an introduction into game theory and information economics. Starting with the two welfare theorems established in Microeconomics A, the course is organized around the limitations of these theorems. In the first two parts, which are covered rather quickly, external effects and public goods are analyzed. These topics are further developed in the courses Wirtschaftspolitik and Finanzwissenschaft. In the third part of the course market power is analyzed, both in a monopoly and an oligopoly context. In addition to standard monopoly and oligopoly theory, the course elaborates on price discrimination and bundling in monopoly and on dynamic aspects of competition such as deterrence. This part also contains an introduction into non-cooperative game theory with a particular focus on the knowledge foundation of games. Solution concepts are developed and discussed. The fourth part of the course addresses asymmetric information as a source of market failure. This part is an introduction into information economics and game theory under asymmetric information. This part begins with adverse selection problems and then covers screening and signaling. It then turns to moral hazard in a principal-agent relationship.

This course provides basic tools and economic mechanisms that not only play an important role in microeconomics but also are relevant across different economic sub disciplines. The focus is on the basic mechanism and not on formal apparatus. Lectures are complemented by incentivized classroom experiments (included in the lecture) and exercise sessions.

Expected competences acquired after completion of the module: The student is acquainted with basic concepts of microeconomic theory complementing the course Microeconomics A. In particular, the student is able to use concepts from game theory and information economics to address economic questions. Apart from being able to apply formal tools to a large variety of real-world issues, the student has learnt to choose the appropriate solution concepts and modeling tools for the question of interest. Thus, the student is able to evaluate what is the appropriate model and synthesize his knowledge by focusing on the fundamental economic mechanism at work. The student has improved communication skills through active participation, in particular in the exercise sessions.

Further information:

- Main textbook: Pindyck, R., & Rubinfeld, D. (2018). Microeconomics (Ninth edition, global ed., The Pearson series in economics).
- Optional textbook: Varian, H. (2014). Intermediate Microeconomics: A modern approach (Ninth edition, international student ed.).

Civil and Commercial Law

Form and usability of the module: compulsory course for B.Sc. Economics

Responsible teachers of the module: Dr. jur. Gernot Wirth / Dr. Stefanie Egidy

Cycle of offer: every fall semester

Duration: 1 semester

ECTS credits: 6

Teaching method (hours per week): lectures (4)

Workload: time in class: lecture 42 hours, 126 hours of independent study time and preparation for the exam

Course language: German

Prerequisites: none

Grading: final exam (180 minutes)

Expected number of students in class: approx. 220 students

Goals and contents of the module: The first half of the module provides an overview of German private law. The focus of the lecture is on general private law (general rules, contract and property law of the German Civil Code). In addition, reference is made to special private law such as commercial law as the special private law of merchants.

The second half of the course provides a first insight into the system of German public law. The main focus of the lecture is on constitutional law and concerns the core questions of the law of state organization and the theory of fundamental rights as well as the fundamentals of financial constitutional law. In addition, it is dealt with the fundamentals of general administrative law and, as a supplement, the fundamentals of the constitutional and administrative process are discussed.

Expected competences after completion of the module: Students are able to integrate both their professional qualifications and their practical activities into the legal and social framework of economic life. Through the teaching of legal principles as well as methods and ways of working, they are prepared to classify and apply the basic knowledge they have acquired in their later practical activities.

Economic History

Form and usability of the module: compulsory course for B. Sc. Economics; compulsory and, if applicable, elective course in other bachelor's programs at the University of Mannheim

Responsible teacher of the module: Prof. Dr. Jochen Streb

Further instructor: Janko Wilzbach for exercise classes

Cycle of offer: every fall semester

Duration: 1 semester

ECTS credits: 6

Teaching method (hours per week): lectures (2) + exercises (1)

Workload: time in class: lecture 21.0 hours, exercise: 10.5 hours, 136.5 hours of independent study time and preparation for the exam

Course language: German

Prerequisites: none

Grading: written exam (90 minutes)

Expected number of students in class: lecture: approx. 280 students, exercise: approx. 280 students

Goals and contents of the module: How did economic growth develop in pre-industrial times; how can the development of capitalist societies be explained and where do economic crises come from? The aim of the lecture is to give a feeling for the long-term development of the economy and the possibilities of analyzing breaks and crises that occur in this context. In addition, an overview of the history of discipleship and an introduction to the history of dogma will be given. Students should become familiar with the methods and contents of the subject on the basis of three decisive events in recent German economic history. The globalization process of the 19th century, the great inflation of 1923 and the world economic crisis of the early 1930s, including the banking crisis, are examined. The course is planned for the following degree programs: Bachelor's degree in economics, BA students with a minor in economics and a teaching degree in political science.

Expected competences after completion of the module: Students have acquired the technical knowledge and methodological skills to analyze and interpret empirical relationships. In particular, they have learnt how to meaningfully link findings from empirical data with qualitative sources and to discuss theory. In the exercise, students have acquired skills for writing an academic term paper, including in particular literature research and the critical evaluation of sources and descriptive data.

Literature:

- O'Rourke, K. & Williamson, J. (2001). Globalization and history: The evolution of a nineteenth-century Atlantic economy (1. MIT Press paperback ed.). Cambridge, Mass. [u.a.]
- Spoerer, M. & Streb, J. (2013). Neue deutsche Wirtschaftsgeschichte des 20. Jahrhunderts. München.
- Holtfrerich, C. (2011). Die deutsche Inflation 1914-1923: Ursachen und Folgen in internationaler Perspektive. Berlin [u.a.]
- James, H. & Stiglitz, W. (1988). Deutschland in der Weltwirtschaftskrise 1924-1936. Stuttgart.

Homepage: <https://www.vwl.uni-mannheim.de/streb/>

Economic Policy

Form and usability of the module: compulsory course for B. Sc. Economics; compulsory and, if applicable, elective course in other bachelor's programs at the University of Mannheim

Responsible teacher of the module: Prof. Dr. Hans Peter Grüner

Further instructors: teaching assistants for exercise classes

Cycle of offer: every spring semester

Duration: 1 semester

ECTS credits: 8

Teaching method (hours per week): lectures (3) + exercises (2)

Workload: time in class: lecture 31.5 hours, exercise 21 hours, 171.5 hours of independent study time and preparation for the exam

Course language: German

Prerequisites: Participation in the bachelor's program of the first three semesters is desirable.

Grading: written exam (135 minutes)

Expected number of students in class: lecture: approx. 220 students, exercise: approx. 40 students

Goals and contents of the module: First, the allocation-theoretical foundations are introduced, which are useful in the analysis of economic policy issues. Then, basic models of political competition and political influence are examined. These are applied to selected areas (fiscal policy, growth policy, monetary policy, labor market policy and competition policy).

Outline:

1. Economic policy and political economy
2. Economic policy objectives
3. Allocation theory basics
4. Basic models of direct and indirect democracy
5. Reforms
6. Political influence
7. Fiscal policy
8. Growth Policy
9. Monetary policy and financial stability
10. Labor Market Policy
11. Competition Policy

Expected competences after completion of the module: Students have developed their ability to independently analyze economic policy issues. They have learned to apply positive and normative theory to specific areas of economic policy and have improved their discussion skills.

Scientific Working

Form and usability of the module: compulsory course for B.Sc. Economics

Responsible teacher of the module: Linda Köhler

Further instructor: Lorena Steeb (University Library)

Cycle of offer: every semester

Duration: 1 semester

ECTS credits: 2

Teaching method (hours per week): online course, self-study, tests, and assignments

Workload: 56 hours for online course, self-study, tests, and assignments

Course language: German

Prerequisites: none

Grading: acquisition of the competences imparted by the course; proof of the competences by tests and assignments; the performance record is evaluated with "passed"/"failed"; no grading takes place.

Expected number of students in class: approx. 220 per year

Goals and contents of the module: the module introduces the basics of scientific work and includes scientific literature research, research in statistical databases and an introduction to the use of literature management programs. The course also deals with topic identification and delimitation, searching and evaluating information, structuring scientific work, writing the raw version, documenting the sources used, visualizing results, scientific style, and presentation of results.

Expected competences after completion of the module: students are able to independently organize their scientific writing projects as part of their studies. They can independently research the literature they need and use databases to obtain information. They have acquired an understanding of how literature management programs work. Students are able to define a suitable topic for a seminar paper or bachelor's thesis, to write the paper or thesis independently according to scientific standards and to present the results in a suitable manner.

Recommendation: the course should be taken before the first scientific paper (seminar paper).

Statistics I

Form and usability of the module: compulsory course for B. Sc. Economics; compulsory and, if applicable, elective course in other bachelor's programs at the University of Mannheim

Responsible teacher of the module: Dr. Toni Stocker

Further instructor(s): teaching assistants for exercise classes

Cycle of offer: every spring semester

Duration: 1 semester

ECTS credits: 8

Teaching method (hours per week): lectures (4) + exercises (2)

Workload: time in class: lecture 42 hours, exercise: 21 hours, and 161 hours of independent study time and preparation for the exam

Course language: German

Prerequisites: none

Admission prerequisite exam: successful participation in the exercises

Grading: written exam, 180 minutes

Expected number of students in class: lecture: approx. 250 students, exercise: approx. 20 students

Goals and contents of the module: The course Statistics I is the first part of the quantitative basic training in the bachelor's program, before the subsequent courses Statistics II and Introduction to Econometrics. Classically, statistics is divided into the two core areas of descriptive statistics and inductive statistics. Descriptive statistics is primarily concerned with methods for preparing, compressing and (graphically) presenting data, while inductive statistics includes probabilistically based methods for interpreting random data. The first part of the course Statistics I deals with common procedures from descriptive statistics and some explorative methods. Since data processing without computers is unthinkable today, the handling of statistical software is an essential part. The second part is about the most important basics of probability theory, which are needed for inductive statistics. The latter is content of Statistics II. Contents:

Part 1: Descriptive statistics - Empirical calculation: Introduction, overall description of empirical distributions (tabular and graphical representation possibilities), specifying description of empirical distributions (location and dispersion characteristics, standardization, skewness, concentration, ...), description and analysis of empirical relationships with graphical and computational methods (contingency coefficient, correlation, simple linear regression, ...)

Part 2: Probability Theory - Theoretical Calculus Introduction: Theoretical distributions and dependencies (random variables and their theoretical characteristics), Special one-dimensional distributions (binomial distribution, normal distribution, ...) Distribution of stochastic sums and mean values (law of large numbers, central limit theorem, ...)

Expected competences after completion of the module: Students know and understand the most important methods for describing and interpreting one- and multi-dimensional data. They can apply the concepts covered to any situation in which data material is generated or has to be evaluated. For this purpose, they master a flexibly applicable statistical software within the required framework. They can also distinguish between the empirical calculation based on data and the theoretical calculation based on probability theory in terms of content and form (e.g. through notation). Small group work (3-4 students) is specifically encouraged in the student-centered and learning-centered exercises.

In addition to the professional exchange about approaches to solving concrete problems (exercises), students learn, experience and develop skills about independent and goal-oriented work in a group, listening to and respecting other opinions, supporting other group members, and tolerance in the area of conflict between sympathy and antipathy. Further information: Participants are strictly assigned to one exercise group (several parallel groups are offered). The registration and allocation of participants to the individual exercise group takes place via Portal2, usually during the first week of lectures by submitting group priorities. Successful participation in the exercises is a prerequisite for admission to the examination. At least 8 of the 13 exercise sessions offered must be attended. This regularly includes the fulfillment of a minimum requirement of individual preparation of exercises and active participation in the exercises. Further details on the organization of the exercises are provided in the course material.

Literature:

- Stocker, T. C. und Steinke, I. (2022): Statistik - Grundlagen und Methodik. Berlin: De Gruyter Oldenbourg.
- Stocker, T. C. und Steinke, I. (2022): Übungsbuch Statistik. Berlin: De Gruyter Oldenbourg.

Statistics II

Form and usability of the module: compulsory course for B. Sc. Economics; compulsory and, if applicable, elective course in other bachelor's programs at the University of Mannheim

Responsible teacher of the module: Dr. Toni Stocker

Further instructor(s): teaching assistants for exercise classes

Cycle of offer: every fall semester

Duration: 1 semester

ECTS credits: 8

Teaching method (hours per week): lectures (4) + exercises (2)

Workload: time in class: lecture 42 hours, exercise: 21 hours, and 161 hours of independent study time and preparation for the exam

Course language: German

Prerequisites: Statistics I

Admission prerequisite exam: successful participation in the exercises

Grading: written exam, 180 minutes

Expected number of students in class: lecture: approx. 200 students, exercise: approx. 20 students

Goals and contents of the module: After Statistics I and before the course Introduction to Econometrics, which is the following course building on the contents of Statistics II, the course Statistics II represents the second part of the quantitative basic training in the bachelor's program. Classically, statistics is divided into the two core areas of descriptive statistics and inductive statistics. Descriptive statistics is primarily concerned with methods for preparing, compressing and (graphically) presenting data, while inductive statistics includes probabilistically based methods for interpreting random data. Data are described here as "randomly dependent" if they do not allow reliable statements to be made due to a lack of information. This occurs, for example, in the context of random sampling or forecasts. The first part of the course Statistics II deals with the basic principles of inductive statistics (estimating and testing). The focus is on teaching statistics as a method for evaluating random data. The second part is devoted to the linear regression model, which is the most important working tool of econometrics. It focuses on the modelling of more complex quantitative relationships. As in Statistics I, the use of statistical software is an essential part of the course.

Contents: Introduction to inductive statistics, statistical estimation (point and interval estimation, estimation methods), statistical testing (hypothesis selection and types of errors, p-values, selected test procedures), simple linear regression model (different model variants, estimation and testing), introduction to the multiple regression model.

Expected competences after completion of the module: Students know and understand the most important concepts for the evaluation and interpretation of one- and multidimensional random data. They are able to apply the concepts covered to any situation in which such data material arises or has to be evaluated. For this purpose, they master a flexibly applicable statistical software within the necessary framework. They can also distinguish between the empirical calculation based on data and the theoretical calculation based on probability theory in terms of content and form (e.g. through notation). Small group work (3-4 students) is specifically encouraged in the student-centered and learning-centered exercises. In addition to the professional exchange about approaches to solving concrete problems (exercises), students learn, experience and develop skills about independent and goal-oriented work in a group, listening to and respecting other opinions, supporting other group members, and tolerance in the area of conflict between sympathy and antipathy.

Further information: Participants are strictly assigned to one exercise group (several parallel groups are offered). The registration and allocation of participants to the individual exercise group takes place via Portal2, usually during the first week of lectures by submitting group priorities. Successful participation in the exercises is a prerequisite for admission to the examination. At least 8 of the 13 exercise sessions offered must be attended. This regularly includes the fulfillment of a minimum requirement of individual preparation of exercises and active participation in the exercises. Further details on the organization of the exercises are provided in the course material.

Literature:

- Stocker, T. C. und Steinke, I. (2022): Statistik - Grundlagen und Methodik. Berlin: De Gruyter Oldenbourg.
- Stocker, T. C. und Steinke, I. (2022): Übungsbuch Statistik. Berlin: De Gruyter Oldenbourg.