

**Course descriptions**  
**MSc Economics Specialization: Digitalisation and the Future of Learning and Work**

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## Curriculum

P1	Advanced Micro (5ECTS)	Empirical Methods in Economics (5ECTS)	Individual competence development (5ECTS)
P2	Advanced Macro (5ECTS)	Behavioural and Experimental Methods (5ECTS)	
P3	Writing a Master's thesis proposal (5 ECTS)		

P4	Education and Labour Economics in a Digital World (5ECTS)		Project (5ECTS)
P5	Economic Analysis of Behaviour (5ECTS)		
P6	Thesis (15ECTS)		

## **Advanced microeconomics**

### ***Description***

This course serves as the foundation in microeconomic theory and game theory. As such the course introduces the necessary tools to model both individual and strategic decision environments. The main topics include consumer theory (utility maximization and choice under uncertainty) as well as introducing students to static games of complete information, dynamic games of complete information, static games of incomplete information and dynamic games of incomplete information. For each class of games, the appropriate equilibrium concept is defined.

### ***Goals***

Students will learn the necessary analytical tools in order to solve problems related to consumer utility maximization and choice under uncertainty, as well as to analyse and solve strategic decision problems involving firms and individuals.

## **Empirical methods in economics**

### ***Description***

People who retire earlier, die earlier. Would you conclude from this evidence that it is better not to retire early? This course offers you (1) tools with which you can take a critical look at such claims, (2) tools with which you can investigate data yourself. In case of this example, causality might run in the opposite direction: people who are healthier work longer than those who are less healthy. So deceasing earlier might not be caused by earlier retirement but be due to worse health of early retirees. To estimate whether early retirement really increases health risks we need a better research strategy.

This course offers such methods and tools along with assignments to see how it works in practice. It considers both cross-section, time series and panel methods. The course develops an understanding of the main tools with which empirical claims can be established or refuted. The philosophy is to explain the empirical strategies in an intuitive way. We focus on analysing economic phenomena, using applied papers as examples.

### ***Goals***

- A critical attitude towards the use of data and the empirical methods to analyse real world events
- How empirical observations can be interpreted and evaluated from an economic point of view
- Experience in working with Stata

## **Advanced macroeconomics**

### ***Description***

Modern growth-theory is concerned with explaining the trend in output per capita and how that trend could be influenced through growth policies. It focusses in particular on the accumulation of human capital and technology that are generally thought to be the drivers of growth. It also emphasizes the role of economic incentives which influence such accumulation decisions. Changing incentive schemes through policy interventions then makes it possible to influence growth performance. Identifying such growth policies is of crucial importance, because in many parts of the world growth is a way to elevate people out of poverty. In other parts of the world it is a way to improve the quality of life not just by increasing consumption of goods and services but also of intangibles like environmental quality. Modern growth theory has turned the growth process from something that was largely out of the control of human beings (i.e. exogenous) into something that actually is the result of interactions between human beings and decisions made by human beings, which makes growth endogenous as these decisions are incentive driven. The endogeneity of growth then turns growth performance at least in part into a policy matter.

The course consists of three parallel activities: 1.) the study of the underlying theories, 2.) execution of empirical assignments, and, also as part of those assignments, 3.) the review and analysis of alternative growth policies.

### ***Goals***

The goal is to understand the sources of economic growth and of growth rate differentials between countries. We use modern growth theory but also catching-up theory to shed light on these issues, and we use international macro-data to identify and quantify aforementioned international growth differentials between (clusters of) countries and tendencies for convergence and/or divergence within and between clusters of countries. Students will develop a deep understanding of the relationship between economic growth and distribution issues and the policies affecting these.

## **Behavioural and experimental methods**

### ***Description***

First, an introduction to the methods of experimental economics as well as a review of basic statistics and econometrics analyses will be given. The course will then cover recent behavioural models of intertemporal decision-making, decisions under risk and uncertainty, as well as strategic and social decision-making. We will discuss recently developed models taking the boundedly rational nature of human decisions into account. The course uses theoretical reasoning, experimental data, and econometric analysis, which will guide the analysis of applied questions from diverse fields. The fields of application range from savings and retirement decisions, health insurance, taxation, labour market policies, incentives and promotion schemes in firms, public good provision, environmental issues, to charitable giving, and even more. An important part of the course will be devoted to discussions of policy implications, policy recommendations, and the need or curse of government intervention.

### ***Goals***

Departing from theories assuming 'homo oeconomicus' agents, participants in this course learn about boundedly rational aspects of human behaviour. The latter play a key role in predicting and designing individual and strategic decisions as well as aggregate outcomes in markets and politics. The students learn to apply the insights generated by a boundedly rational approach to various fields in Public Economics and Managerial Economics, among others. The students learn to use experimental methods as well as statistics and econometrics to assess the validity of theoretical predictions of human behaviour. Participants will be prepared to assess scientific studies critically and to come up with problem statements and an adequate study design on their own.

## **Individual competence development**

### ***Description***

Through the Individual competence development trajectory students are supported in the development of academic competencies as described in the profile of the programme. Depending on the competencies a student has identified for further development, a set of sessions on study and job-related skills can be chosen. The course offers a broad portfolio of competencies for the job market. This includes activities ranging from applied skills (e.g. mathematics or statistical software) to networking and job market skills (e.g. interview and assessment preparation).

### ***Goals***

The goal of this trajectory is:

- to support the development of academic competences and to encourage reflection on this development and
- to prepare for the labour market after graduation.

## **Writing a master's thesis proposal: economics**

### ***Description***

Writing a master thesis is a compulsory part of the program curriculum. The skills training assists students in getting the thesis process started, First, students will be informed about the formal process of writing a master thesis at our faculty, i.e., format of the thesis, requirements, grading rules, resit options etc. Second, students will learn how to develop a research idea and finally transferring it into a proper and feasible research proposal. This is the main part of the training and assists students by writing down the academic relevance of their topic and how to develop a research design. The main goal is to finally have a clearly defined research proposal with which the student can start approaching a thesis supervisor. Third, the skills training helps students to find a thesis supervisor.

### ***Goals***

Students learn how to start the thesis process by transforming a broad topic/idea into a proper, feasible research proposal.

## **Education and Labour Economics in a Digital World**

### ***Description***

In education and at work people acquire the skills that they need to proceed at school and are valuable for them throughout their career. New technologies change people's work environment, their learning process and the relevance of acquired skills. Based on economics of education and economic theories of labour and skill formation, this course discusses these developments and how they affect individual development, careers and productivity. We will study how education and work adjust to ongoing technological changes and how it generates inequalities and opportunities for specific groups in society. Theories discussed include human capital theory, school choice, supply and demand in the labour market and theories of technological change. A particular focus of the course is to apply these theories by analysing real-life issues arising in labour markets or education systems due to digitalisation. We also discuss how the relevant skills can be measured and how such measures can inform policy.

### ***Goals***

Students will acquire knowledge of economics of education, and economic theories of labour and skill formation, and learn to apply it to real-life problems. Students will acquire knowledge about the measurement of skills, how such measures can be used for educational policy making and their limitations.

## **Economic analysis of behaviour**

### ***Description***

Digitalisation affects learning in schools and at work and thereby influences the decision-making in firms and schools. For example, schools have to decide about adding programming skills to the curriculum, or the use of digital technologies in class. Firms might consider to offer specific training courses to their employees or have to decide whether to replace groups of workers by robots. Theories within the field of labour and education economics have shown the importance of using an economic model for such decision-making. It is crucial to compare the various choice options and understand the consequences of these options. This yields important information on how such choices (and thereby outcomes) change if the situation changes (e.g., because of technological development or by policy interventions). In this course students learn how to build their own economic model, using inputs from models in microeconomics and labour economics. Modelling techniques are used to show how to analyse why people make certain choices under certain circumstances, including the role of preferences and uncertainty.

### ***Goals***

Understand how social issues can be analysed theoretically from an economic perspective. Being able to describe behaviour in terms of choices people make (trade-offs) and market interactions that exist. Acquiring skills for developing a theoretical economic model answering a concrete decision-making problem or policy intervention.

## **Project: Economics case-studies**

### ***Description***

The project aims to give students a challenging opportunity to increase their knowledge of Economics and apply it to solve important economic problems/challenges. After a common introductory part, students will work in teams, tackling a particular case, relevant to a real-life economic decision maker (be it a business, a government, or a non-government organization). In case of a project involving a company for example, the goal is to provide an analysis of and/or a solution to the problem that the organisation in question could further develop and implement. Students are encouraged to use a wide range of methods and techniques including data analysis, theoretical modelling, simulation, experiments, etc.

### ***Goals***

After successfully finishing this skills course, students will be able to:

- apply knowledge of economic theory, approaches, perspectives, and methodologies to real-life problems and/or policy issues.
- Independently acquire new knowledge and skills which are relevant for tackling an economic problem.
- translate a general problem into a specific (research) question, and make use of a relevant approach to obtain an answer.
- communicate the outcomes of the analysis in general and the proposed solution in particular.