

## Master in Applied Economics: Electives for 2021/2022 Academic Year

### Electives (12 weeks long + finals week)

Students need to take 7 elective classes to complete their studies.

To gain a specialization, you need to take at least 3 classes assigned to that specialization. There are four specializations: Finance, Corporate Economics, Public Policy and Macroeconomic Forecasting.

### Electives offered in the spring semester:

Class	Instructor	Specialization
Machine Learning Techniques	Michal Kubista	Corporate Economics
Monetary Theory and Policy	Branislav Saxa	Public Policy, Macroeconomic Forecasting
Introduction to Time Series Analysis	Pavla Vozarova	Macroeconomic Forecasting, Finance, Corporate Economics
Policy evaluation	Miroslava Federicova, Filip Pertold	Public policy
Strategic Thinking: Theory and Practice	Ole Jann	Public Policy, Corporate Economics

### Electives offered in the summer semester:

Class	Instructor	Specialization
Corporate finance and valuation	Richard Podpiera	Finance, Corporate Economics
Forecasting and Stress Testing Risk	Brenda Solis Gonzalez, Vera Tolstova	Macroeconomic Forecasting
Topics in Labor and Health Economics	Eva Hromadkova	Public Policy, Corporate Economics
Time Series Applications in Finance	Kamil Kovar, Peter Štefko	Finance, Public Policy
Topics in Macroeconomics	Jose Luis Luna Alpizar	Macroeconomic Forecasting, Finance

## Corporate Finance and Valuation

*Richard Podpiera, Executive Director – Retail Group Segment Management, CSOB (Bank)*

The goal of this course is to teach students key concepts and their practical applications in corporate finance and valuation so that they are well prepared for starting their careers in corporate finance, investment banking, commercial banking, or management consulting. The aim is to show students how managers solve practical problems using key corporate finance concepts and therefore business cases and real world applications will be used extensively throughout the course.

### Student evaluation:

*“Richard was one of the best teachers in the whole program. Very experienced, very well prepared, and with very good approach to students. Open to questions, answering very deeply and in a very knowledgeable way. I learned a lot with this teacher. Very well organized, everything was clear.”*

*“The best teacher I ever had (not just at CERGE, but ever) - the relaxed way of teaching while still explaining complicated stuff simply enough to understand them.”*

## Forecasting and Stress Testing Risk

*Moody’s Analytics team (Brenda Solis Gonzalez and Aisha Baisalova)*

This course is intended for future risk management practitioners at all levels: from analysts and risk modelers to heads of departments in financial institutions and financial regulatory authorities. The course takes a hands-on approach to learning key aspects of forecasting and stress testing. As financial institutions are required to comply with increasingly stringent and complex requirements, these stress-testing exercises are designed to anticipate a broad spectrum of shocks to prepare for changing macroeconomic and market conditions. The technical aspects of forecasting and stress testing, as well as their implication for business planning and regulatory requirements, are covered.

We will study some of the key models used for risk management including methodologies for macroeconomic scenario generation, and design of models for market, credit, interest rate and liquidity risk. We will employ econometric techniques, numerical methods and statistical software used in the financial industry. Context for each topic is provided by real case studies from project management experience with many of the most important financial institutions worldwide.

### Student evaluation:

*“I have learnt a lot and the course gave me an understanding and practical application of what a day to day risk modeler does.”*

*“Brenda was very good. I understood her part much better but still it is visible that she could improve her teaching skills. On the other hand, her level of technical and practical knowledge in building models for stress testing is impressive.”*

## Introduction to Time Series Analysis

*Pavla Vozárová, ČVUT*

The main objective of this course is to develop the skills needed to understand analyses based on time series data and to learn how to apply these skills when solving specific empirical issues that a data scientist may encounter in this field. We will discover non-parametric and parametric models for univariate and multivariate stochastic processes, we will describe their specific advantages and pitfalls, and we will explore how these models are used for forecasting. In the course, we will cover both the theory and the practical application using statistical software, focusing mainly on practical applications of time series methods in academic and institutional research and business analyses. The prerequisites of the course are introductory statistics and econometrics and the knowledge of economic theory.

*Student evaluation: "Actually, the course covered interesting materials and it valuable to understand time series better. The content of the course is intellectually engaging. The power points are well prepared and they contain the most important information. The course promoted some further thought."*

## Machine Learning Techniques

*Michal Kubista, Senior Technological Officer at Nielsen*

The course introduces the newly emerging and very prospective field of machine learning. With the development of information and communication technologies, particularly, customer relationship management (CRM) computer systems, the proliferation of smart phone technologies and the mass use of social networks all around the globe, the regular and efficient collection of data is not an issue anymore. The challenge today is rather how to handle the abundance of collected available for making a more precise informed decisions in any business area.

The purpose of the course is to build advanced data-science and econometrics skills required for precise and unbiased identification of the relationships between the market data inputs and resulting observed behavior.

The knowledge and abilities that students would acquire in the course would open them the doorway for successful career in strategic consulting, data analysis and business development. They will get acquainted with different models that could be used for pricing and advertising analysis, recommendation systems and demand planning. Statistical software packages for the practical part of the course are especially selected to correspond to the toolbox commonly applied by the big marketing agencies and managerial consultancies but also by the analytical departments of leading multinational corporations.

Please, note that at least basic knowledge of R is a precondition for taking this course. Datacamp courses needed to satisfy this condition will be stipulated in few weeks.

*Student evaluation:*

*"The most applicable and fascinating class! Lectures and other materials were organised well. Course outline is great. My programming skills have improved significantly as well as my knowledge of marketing."*

*"Michal was pretty great, helped anyone who asked and was pretty straight forward with the grading and comments."*

## Monetary Theory and Policy

*Branislav Saxa, Principal Economist at Czech National Bank, Head of Monetary Analyses and Monetary Policy Transmission Team*

The main aim of this course is to achieve understanding of the goals of monetary policy and instruments available to central banks in order to pursue these goals. After establishing a series of stylized facts, lectures on interest rates and inflation lead to the study of monetary policy transmission mechanism. Consequently, the idea and key ingredients of New Keynesian model are studied. Money creation in modern economy is explained. While the focus of the course is on the inflation targeting, the alternative monetary policy regimes and the choice among them are discussed too. Towards the end of the course, unconventional monetary policies are covered with the overview of their recent use. Throughout the course, a special attention is paid to monetary policy in open economies and economies in various stage of transition.

### Student evaluation:

*"I have learnt a lot and I really liked this course. We had interesting discussions and lectures were not boring at all! Well-organized lectures and the teacher belongs to my top 3 teachers that I have had in CERGE-EI."*

*"Slides were clear and not overwhelmed with text. The teacher gave lots of examples and illustrations of important concepts. He emphasized the most important things and made sure that everybody in the class would understand it. Super!"*

## Policy Evaluation

*Miroslava Federicova and Filip Pertold, IDEA at CERGE-EI*

The aim of this course is to offer students systematic and rigorous tools in order to evaluate the impacts of a wide spectra of public policies (in the field of labour, education, social issues and firm subsidies). Students will learn how to assess impacts of policies through controlled field experiments, ex-post evaluation methods that identify causal impacts of policies based on observational data, and incorporate impact assessments directly into policy making.

The course is divided into two parts. During the first lectures, students are provided with main identification and empirical strategies used nowadays in public policy evaluation.

The second part of the course is targeted on the real public policy issues in the Czech Republic and on the evaluation of these policies using the real administrative data. Under the supervision and help of the lecturer, students divided into small research teams will further evaluate the impact of already existing policies based on the data or suggest a new public policy and predict its impact.

Student evaluation: *No evaluation available, newly offered course.*

## Strategic Thinking: Theory and Practice

*Ole Jann, CERGE-EI*

The main objective of this course is to develop the skills needed to understand analyses based on time series data and to learn how to apply these skills when solving specific empirical issues that a data scientist may encounter in this field. We will discover non-parametric and parametric models for univariate and multivariate stochastic processes, we will describe their specific advantages and pitfalls, and we will explore how these models are used for forecasting. In the course, we will cover both the theory and the practical application using statistical software, focusing mainly on practical applications of time series methods in academic and institutional research and business analyses. The prerequisites of the course are introductory statistics and econometrics and the knowledge of economic theory.

### Student evaluation:

*“Game theory was a valuable course. I hope to apply it to my every day thinking. I was happy to see glimpses of formal theorems. I am curious, how would it be if we were a bit more formal in the game theory situation. On the other hand, I would say that Ole distilled the most valuable finding and principle for us in an intriguing way.”*

## Time Series Applications in Finance

*Kamil Kovar, Moody’s and Peter Štefko, RSJ*

In this course, the students will be challenged with the quantitative problems arising in finance. Over the course the students will address a variety of problems from finance such as building financial models, estimation and inferences of financial models, volatility estimation, risk management, testing financial economics theory, capital asset pricing, etc. The course also provides introduction into the field of economic and especially econometric forecasting based on time series. Students should also be able to evaluate the relative usefulness and reliability of various types of forecasts used in the consulting business and they should be able to design and estimate simple forecasting models.

### Student evaluation:

*“The course was great, it was interesting with different topics, from finance and macro. Both teachers were always prepared and they are excellent.”*

## Topics in Labor and Health Economics

*Eva Hromádková, MAE Program Director and Senior Analyst of the Economy, CNB*

This course covers the basic topics from the two fields of economics that study development of human capital – labor economics and health economics. Topics in labor include demand and supply of labor and their determinants, negotiation of wage on labor markets and state regulation in the field. Health part includes demand and supply of health and health care, health care financing and insurance, market failures and specific topics like pharmaceuticals, long term care, economics of risky behavior etc. Each week is divided into two parts, where the first part covers theoretical underpinnings of the topic and the second empirical application and exploration of the issue.

Student evaluation: *“One of the two best courses during the summer semester! Even though the material was not that easy, the teacher was able to present it in understandable and engaging way. I would recommend this course to other students definitely.”*

## Topics in Macroeconomics

*Jose Luis Luna Alpizar, CERGE-EI*

In this course, we will review and analyze modern theories of labor markets used in macroeconomics. This course will provide an introduction to job search models and their microeconomic applications with a specific focus on their use in policy analysis and macroeconomic modeling. Special emphasis will be placed on methods to make use of accessible panel data and repeated cross sectional data to describe and explain real-life phenomena such as unemployment volatility, wage dispersion, and the impact of labor policies such as unemployment insurance. The objective of this course is to provide students with a set of concepts and tools that they can use for quantitative policy analysis on several fields of study: labor, I/O, macro, applied micro, development, and family economics. Although the course has a sound theoretical (mathematical derivations) component, we will focus on applied exercises (MATHLAB, Python, R) with real data.

*Student evaluation:*

“That class is just great! Even it turned to be slightly over complicated in the second half of semester (technically this is the most complicated class we had), I enjoyed it a lot.”

“I liked this class a lot, I would definitely take it again. “