

## COURSE DESCRIPTION

Course code	Course group	Volume in ECTS credits	Course valid from	Course valid to
EKF5014	C	6	2016 03 31	2019 03 01

Course type	Compulsory
Course level	Master (postgraduate) level
Semester the course is delivered	3
Study form	Face-to-face

### Course title in English

**FINANCIAL ECONOMETRICS**

### Course title in Lithuanian

**FINANSŲ EKONOMETRIKA**

### Short course annotation in Lithuanian (up to 500 symbols)

Šiuo dalyku siekiama pagilinti statistinės ir ekonometrinės analizės žinias ir gebėjimus, esmingai papildančius ir išbaigiančius pasirinktos studijų krypties išsilavinimą. Šiame studijų dalyke formuojami įgūdžiai, reikalingi finansų rinkos ir jos aplinkos duomenų analizei ir prognozavimui. Studentai, sėkmingai baigę šį studijų dalyką, įgyja gebėjimų savarankiškai ir grupėse organizuoti ir įgyvendinti ekonometrinis tyrimus ir pristatyti jų rezultatus specialistų ir nespecialistų auditorijai. Praktinių užsiėmimų metu įgyjami gebėjimai, ypač reikalingi finansų rinkų analitiko darbe.

### Short course annotation in English (up to 500 symbols)

This course belongs to the selective subjects' area and seeks to deepen knowledge and skills in statistic and econometric analysis, essentially complementary and completing the chosen study field of education. Students train skills required for the data analysis and prediction of financial market and its environment. Students acquire skills to organize and implement econometric researches independently and in groups and to present results to the specialists and non-specialist audience. During workshops students acquired skills especially needed at work of financial markets analyst.

### Prerequisites for entering the course

Applied Econometrics

### Course aim

Students will acquire knowledge and skills required to apply the theory of econometrics, time series and panel data analysis methods to solve practical problems in the field of finance and investment.

### Links between study programme outcomes, course outcomes and criteria of learning achievement evaluation

Study programme outcomes	Course outcomes	Criteria of learning achievement evaluation
1. Demonstrate knowledge of classical and modern financial, accounting, economic and management theories, models, methods and findings of applied research in the changing macroeconomic and business environment.	1. According to identified properties of time series, be able to apply appropriate models used to validate causality analysing time series. Student will be able to identify causality in financial markets.	Using causal relationships logic based on economic theory student will form equation systems, in which the same variable could be cause and effect. Student apply VAR model and Granger causality test while identifying causal relationships between economic phenomena
5. Know and be able to apply modern methods and instruments for complex strategic financial and investment decision making, financial risk assessment, financial and investment policy development, based on assessment of alternatives.	2. Be able to apply appropriate tests to analyse properties of time series, to identify stationarity, trend, seasonality and etc.	Student know and apply Dickey-Fuller, Engle-Granger, Johansen and other tests for analysis of time series properties
	3. Be able to apply various methods to analyse different types of balanced panel data.	Student apply FD, FE and RE models analysing financial information in form of panel data
	4. Be able to apply specific instruments to analyse unbalanced panel data.	

3. Demonstrate understanding and ability to evaluate complex macroeconomic environment and factors, influencing financial decisions in financial and real sectors of the economy.	5. Be able to analyse returns of different assets, their distribution in time, forecast returns and apply tests for evaluating market effectiveness and asset pricing.	Student analyse asset return and is able to forecast it, evaluate market effectiveness and perform asset pricing
2. Demonstrate knowledge of quantitative and qualitative research methods, understand possibilities for their application and their limitations. 8. Be able to plan and to perform independent research by developing research methodology, collecting and systemizing data and information and applying them for the analysis and assessment of the relevant real world financial problems under growing uncertainty. 9. Be able to present the results of scientific research in scientific events and to prepare a scientific publication.	6. Be able to analyse panel data combining methods suitable for cross-sectional and time series analysis, to understand how panel data could be applied for evaluating exogenous policy impact on companies.	Student independently perform research using different analysis methods and different type of data for evaluation of financial phenomenon and solving particular financial problems
	7. Be able to apply panel data and analysis methods suitable to evaluate exogenous policy impact on companies and detect or model quasi-experimental conditions.	
	8. Be able to model time series when classical assumptions about error term properties are not valid, to model volatility of financial instruments.	Student validate classical assumptions of error terms in time series models and in cases when these assumptions does not hold apply ARCH and GARCH models.

#### Link between course outcomes and content

Course outcomes	Content (topics)
1. According to identified properties of time series, be able to apply appropriate models used to validate causality analysing time series. Student will be able to identify causality in financial markets.	1. Introduction to time series analysis: stationarity, unit root process, Dickey-Fuller test; cointegration, Engle-Granger and Johansen tests
2. Be able to apply appropriate tests to analyse properties of time series, to identify stationarity, trend, seasonality and etc.	2. Granger causality: ADL, ECM, VAR and VECM models.
3. Be able to apply various methods to analyse different types of balanced panel data.	3. Asset return and its distribution. Asset return forecast. Market effectiveness tests and asset pricing models
4. Be able to apply specific instruments to analyse unbalanced panel data.	4. Deterministic and stochastic trend and volatility. ARCH models. GARCH and other models for evaluation of stochastic volatility.
5. Be able to analyse returns of different assets, their distribution in time, forecast returns and apply tests for evaluating market effectiveness and asset pricing.	5. Combination of cross-sectional data and time series: models with independently pooled cross-sections over time. Evaluation of policy (strategy) impact on economic outcome.
6. Be able to analyse panel data combining methods suitable for cross-sectional and time series analysis, to understand how panel data could be applied for evaluating exogenous policy impact on companies.	6. Balanced panel data and models: FD, FE and RE.

7. Be able to apply panel data and analysis methods suitable to evaluate exogenous policy impact on companies and detect or model quasi-experimental conditions.	7. Unbalanced panel data and models
8. Be able to model time series when classical assumptions about error term properties are not valid, to model volatility of financial instruments.	8. Evaluation of policy (strategy) impact on economic outcome using models for balanced and unbalanced panel data

### Study methods

*Teaching methods:* visual presentation of information (explanation, illustration); lecture-based case analysis; formulation and explanation of problem-based examples and questions; moderation of discussions; moderation of case studies; consultations.

*Learning methods:* discussions; analysis of problem-based examples and questions; consultations; practical tasks; analysis of written cases and examples; group discussion on seminar tasks; collective student work while preparing a group presentation; oral self-reflection; independent student work: search and analysis of information in educational literature, periodicals, statistical documents, etc.

### Methods of learning achievement assessment

Midterm – test covering half of topics. Exam – test covering second part of topics and computer tasks. Assessment of individual homework (research work) preparation and its oral presentation and discussion consisting of three parts: theoretical framework of the research, data and model for evaluation, evaluation results, conclusions and interpretations.

### Distribution of workload for students

Lectures –30 hrs.

Seminars and discussions – 15 hrs.

Team work – 15 hrs.

Independent student work (*for a student to prepare for midterm, individual homework written and oral presentation; prepare for the examination*) – 100 hrs.

### Structure of cumulative grade

Midterm exam – 10%.

Individual homework –40%.

Examination - 50 %.

### Recommended literature

Recommended literature					
No.	Publication year	Authors of publication and title	Publishing house	Number of copies in	
				University library	University library
Compulsory literature					
1.	2014	Brooks, Ch. <i>Introductory Econometrics for Finance 3rd ed.</i>	Cambridge University Press, NY	<a href="http://rum.prf.jcu.cz/public/mecirova/eng_ekonomka/Chris_Brooks_Introductory_Econometrics_for_Fina.pdf">http://rum.prf.jcu.cz/public/mecirova/eng_ekonomka/Chris_Brooks_Introductory_Econometrics_for_Fina.pdf</a>	
2.	2016	Graham, E., Timmermann, A. <i>Economic Forecasting</i>	Princeton University Press		
3.	2009	Mills, T.C., Patterson, K. ed. <i>Palgrave Handbook of Econometrics. Volume 2. Applied Econometrics.</i>	Palgrave McMillan	<a href="https://he.palgrave.com/resources/sample-chapters/9781403917997_sample.pdf">https://he.palgrave.com/resources/sample-chapters/9781403917997_sample.pdf</a>	
4.	2014	Adkins, L.C. <i>Using GRETL for Principles of Econometrics, 4th ed.</i>	Oklahoma State University Press	<a href="http://www.learneconometrics.com/gretl/using_gretl_for_POE4.pdf">http://www.learneconometrics.com/gretl/using_gretl_for_POE4.pdf</a>	
5.	2015	Ruppert, D.; Matteson, D.S. <i>Statistics and Data Analysis for Financial</i>	Springer	<a href="https://books.google.lt/books?id=9X19CAAAQBAJ&amp;pg=PA78&amp;lpg=PA78&amp;dq=ruppert+statistics+and+data+analysis+for+financial+engineering+pdf&amp;source=bl&amp;ots=VuML-bmORq&amp;sig=TZjKP6MgpRzDX4x4JusROSnj1G0&amp;hl=">https://books.google.lt/books?id=9X19CAAAQBAJ&amp;pg=PA78&amp;lpg=PA78&amp;dq=ruppert+statistics+and+data+analysis+for+financial+engineering+pdf&amp;source=bl&amp;ots=VuML-bmORq&amp;sig=TZjKP6MgpRzDX4x4JusROSnj1G0&amp;hl=</a>	

		<i>Engineering (with R examples) 2nd ed.</i>		lt&sa=X&ved=0ahUKEwibiruwwsTLAhWoHJoKHXPmDz84ChDoAQhQMAg#v=onepage&q&f=false
<b>Supplementary literature</b>				
1.	1997	Campbell, J.Y., Lo, A.W., McKinlay, C. A. <i>The Econometrics of Financial Markets.</i>	Princeton University Press	
2.	2001	Gourieroux, Ch., Jasiak, N. <i>Financial Econometrics: Problems, Models, and Methods.</i>	Princeton University Press	
3.	2010	Kozhan., R. <i>Financial Econometrics with EViews</i>	Ventus Publishing ApS	<a href="http://www.zums.ac.ir/files/research/site/ebooks/finance/financial-econometrics-eviews.pdf">http://www.zums.ac.ir/files/research/site/ebooks/finance/financial-econometrics-eviews.pdf</a>
4.	2008	Lapinskas, R. <i>Ekonometrija su kompiuteriu II. Laikinės sekos.</i>	Vilniaus universiteto leidykla, Vilnius	<a href="http://web.vu.lt/mif/a.reklaite/files/2012/09/Praktine-ekonometrija.II-ts-su-R-2009iii28.pdf">http://web.vu.lt/mif/a.reklaite/files/2012/09/Praktine-ekonometrija.II-ts-su-R-2009iii28.pdf</a>
5.	2011	Carnot, N., Koen, V, Tissot, B. <i>Economic Forecasting and Policy.</i>	Palgrave Macmillan	

**Course description designed by**

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