

## COURSE DESCRIPTION

<b>University:</b> Comenius University in Bratislava	
<b>Faculty:</b> Faculty of Management	
<b>Course ID:</b> FM.KKM/279AM/21	<b>Course title:</b> Modeling of Economic Processes
<b>Educational activities:</b> <b>Type of activities:</b> lecture / seminar <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 28 / 28 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 7	
<b>Recommended semester:</b> 2.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Course requirements:</b> Course evaluation during the semester: 2 written test in the middle and at the end of the semester for 20 points (max. 40 points). The test can be taken in an alternate time during the semester, if the student proves his / her absence by a medicine confirmation. 4.) According to the University Act, a student can have max 2 absences (one on theoretical and one on practical exercises). Next absence will be evaluated by -1 point in the final assessment of each type of exercise. Assessment of the subject during the Examinations period: The final written exam (100 minutes), consists of 2 examples (1 from time series modelling and 1 from Option strategies). (max. 60 points) Exam: a student can complete 1 regular and one corrective term if he / she does not reach the required number of points to complete the course on the regular term. The student completes the course if he / she obtains at least 60% of points (ie 24 points) from the continuous assessment, so that he / she can go to the exam and min. 60% of the exam points (ie 36 points) to pass the exam. The points that the student obtains during the semester and in the exam are included in the final grade of the subject. Scale of assessment (preliminary/final): 40/60	
<b>Learning outcomes:</b> The objective of this course is to provide some knowledge of financial time series, introduce some statistical tools useful for analyzing these series, and gain experience in financial applications of various econometric methods.	
<b>Class syllabus:</b> Financial Time Series and Their Characteristics. Linear Time Series Analysis and Its Applications. ARIMA models. Random walk. Seasonal models. Continuous-Time Models and Their Applications. Options. Ito's Lemma Derivation of Black-Scholes Differential Equation. Extension of Ito's Lemma. Options strategy.	
<b>Recommended literature:</b> Rob J Hyndman, George Athanasopoulos: Forecasting: Principles and Practice	

Ratnadip Adhikari, R. K. Agrawal: An Introductory Study on Time Series Modeling and Forecasting  
Wilmott, Dewynne, Howison: Option Pricing: Math. Models and Computation  
Bohdalová, Mária - Greguš, Michal: Stochastické analýzy finančných trhov.  
Ruey S. Tsay: Analysis of Financial Time Series

**Languages necessary to complete the course:**

english

**Notes:**

**Past grade distribution**

Total number of evaluated students: 0

A	ABS	B	C	D	E	FX	M
0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

**Lecturers:** doc. RNDr. Mária Bohdalová, PhD., doc. Ing. Mgr. Urban Kováč, PhD., Mgr. Peter Pšenák, PhD.

**Last change:** 13.10.2021

**Approved by:**