Type and level of studies: PhD					
Title of the study program: Economics, Statistics					
Subject title: Applied Time Series Analysis 1-D					
Subject code: DPAV					
Number of ECTS: 9					
Subject status (Compulsory / Elective): Elective					
Teacher/s (Name, last name): Zorica, Mladenović					
Number of active teaching lessons:					**Other lessons** 0
Lectures: 3	**Practice classes**: 0	**Other forms of teaching**: 0	**Study research work**: 3		
Prerequisite: None					

Subject objective: Time series methods provide foundation for deriving relevant economic conclusions. Application of these methods enables time series forecasting and simulation of the economic policy measures. This subject considers methods of macroeconomic modeling that are based on time series and panel data. Given that cointegration approach is key framework of macroeconometric modeling, this subject is devoted to cointegration methods used in time series and panel data. Practical issues in modeling are also discussed.

Subject outcome (gained knowledge): Students have adopted key principles of cointegration theory for time series and panel data. Students have acquired theoretical and practical knowledge of applying cointegration methods in empirical work by using real data sets. Students have gained knowledge of drawing relevant economic conclusions based on obtained cointegration results.

Subject content/structure: Cointegration analysis of time series. Vector equilibrium error correction model and common trend representation. Estimation of cointegrated system. Testing for cointegration (number of cointegrating vectors): likelihood ratio test statistic and its asymptotic distribution under different deterministic component set-up. Identification of the cointegration relations. Weak exogeneity identification. Cointegration analysis with two unit roots. Stability analysis within cointegrated VAR framework. Structural modeling of cointegration system. Cointegration analysis of panel data. Panel unit root tests: first and second generation. Standard panel cointegration tests. Panel cointegration tests based on common factors. Estimation of cointegration parameters in panel data. Empirical modeling: inflation and monetary dynamics, real convergence, identification of inflation episodes, money demand, real exchange rate, etc.

Teaching methods:
During theoretical classes cointegration models and methods are overviewed. Study research work takes place in computer room with the purpose of modeling real economic time series

Grading (maximum number of points 100)

Pre-examination obligations	**Points**	**Final exam**	***Points***
Activities during lectures	20	**Written exam**	60
Practice lessons		**Oral exam**	
Colloquium/a	20	....	
Semester papers			

Literature:

No.	**Author**	**Title**	**Publisher**	**Year**
1.	Arsić, M., Mladenović, Z., Nojković, A. Petrović, P.	Macroeconometric modeling of the Serbian economy: Theory and results, in Serbian	CESMecon	2005.
2.	Bardsen, G., Eitrheim, O., Jansen, E., Nymoen, R.	The Econometric of Macroeconomic Modelling	Oxford University Press	2005.
3.	Enders, W.	Applied Econometric Time Series	Wiley 3rd ed.	2009.
4.	Juselius, K.	The Cointegrated VAR Model: Methodology and Applications	Oxford University Press	2006.