Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
ECK 607	Time Series Analysis and Macroeconometric Applications	1	3	0	0	3	8

Prerequisites	
Admission Requirements	

Language of Instruction	Turkish
Course Type	Elective
Course Level	Doctoral Degree
Objective	This course aims to provide graduate students with the advanced theoretical foundations of time series econometrics and their applications in macroeconomics. Ranging from the modeling of stationary and non-stationary time series to multivariate time series analysis (VAR, cointegration, VECM) and advanced topics such as structural breaks and state-space models, the course equips students with the analytical skills needed to conduct original macroeconometric research.
Content	The course covers stationarity and unit root tests, ARIMA models, multivariate time series models (VAR, structural VAR), cointegration analysis (Engle-Granger and Johansen methods), and error correction models (VECM). It also addresses conditional heteroskedasticity models (the ARCH/GARCH family), an introduction to panel time series methods, structural break tests, and an introduction to state-space models and the Kalman filter. All methods are addressed in an applied manner using macroeconomic datasets.
References	J.D. Hamilton "Time Series Analysis" Princeton 1994 F. Hayashi " Ecoonmetrics" Princeton, 2001 Kantz&Schreiber 2004 "Nonlinear Time Series Analysis" Gilboa, Decision Making under risk and uncertainty, lecture notes Macroeconomics, Blanchard Money, Banking and Economy of Finance, Mishkin 2011 Optimisation- Belmann , Chiang 1997 R

Theory Topics

Week	Weekly Contents
1	Stochastic Modeling of Risk, Uncertainty and Financial Prices
2	Financial Time Series: Stagnation, Dependency Structures and Model Specification
3	Vector Autoregressive (VAR) Models: Theoretical Foundations, Prediction and Diagnostic Test
4	Dynamic Analysis of VAR Models: Granger Causality, Impulse Response Functions, and Variance Decomposition
5	Ecomomy political analysis * pc programming and statistical tools
6	Complex Financial Systems: Leverage, Liquidity, Network Interconnects and Systemic Risk
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