



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Time Series Analysis							
Course Code		İKP604		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	5	Workload	131 (<i>Hours</i>)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		To provide an advanced understanding of the core principles of time series analysis. To ensure students are competent in the use of time series methods, and are familiar with the relevant statistical software. To introduce to students an appreciation of recent developments in time series analysis, and of the links between the theory of the topics and their practical application in various industries. To develop knowledge, understanding and skills in applied computing and statistics.							
Course Content		Stationary processes, autoregressive and moving average processes, trend, seasonality, model building, estimation and forecasting, spectral analysis and estimation, Kalman filtering and predictions, higher-order spectral analysis, nonlinear and non-Gaussian time series, weakly and strictly stationary stochastic processes, ergodic and ensemble theory, time and frequency domain, spectral decomposition theory, multivariate spectra, estimation and inference of non-stationary time series.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Individual Study					
Name of Lecturer(s)									

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading

1	Bisgaard, S. & Kulahci, M. (2011). Time Series Analysis and Forecasting by Example, John Wiley & Sons
2	Harris, R. & Sollis, R. (2003). Applied Time Series Modelling and Forecasting, John Wiley & Sons

Week	Weekly Detailed Course Contents	
1	Theoretical	Basic Concepts, Graphical Tools, and Time Series Examples
2	Theoretical	Regression, Trend, and Seasonality
3	Theoretical	Time Series Model Evaluation and Selection Criteria
4	Theoretical	Stationary Models
5	Theoretical	Moving Average and Autoregressive Processes
6	Theoretical	Spectral Theory and Filtering
7	Theoretical	Non-stationary Models
8	Intermediate Exam	Midterm
9	Theoretical	Unit Root and Explosive Time Series
10	Theoretical	Seasonal Time Series
11	Theoretical	Multivariate Time Series
12	Theoretical	State-Space Models
13	Theoretical	Transfer Function Models
14	Theoretical	Nonlinear Models
15	Theoretical	Further Topics
16	Final Exam	Final

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	2	3	70
Individual Work	14	1	2	42
Midterm Examination	1	8	1	9



Final Examination	1	9	1	10
Total Workload (Hours)				131
[Total Workload (Hours) / 25*] = ECTS				5
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	Apply the appropriate techniques to make better forecasts and identify trends, seasonal changes, and cycles in data.
2	Understand how to choose the right forecasting model.
3	Become familiar with classification and formulation of advanced time series methods.
4	Analyze the stationarity and characteristics of time series models.
5	Apply time series analysis in various forecasting problems and interpret and report the results of prediction and forecasting.

Programme Outcomes (Economic Policy Doctorate)

1	To be able to understand and interpret basic economic concepts, theories and methods
2	To be able to apply mathematical, statistical and econometric analysis tools to economic problems
3	To be able to interpret the structure and characteristics of the markets in the economy by understanding current economic events.
4	To be able to describe the role of innovation, creativity and technology in the dynamic global economy.
5	Ability to prepare projects and acquire creativity skills
6	Ability to analyze macro and micro economic developments
7	Being able to adopt the philosophy of lifelong learning

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5
P1	3	4	5	3	4
P2	4	4	5	3	4
P3	4	4	5	3	4
P4	4	3	3	3	4
P5	4	3	3	4	4
P6	4	3	3	4	4
P7	4	3	3	4	4

