■ CE811 - Time Series Analysis

GENERAL

SCHOOL	EXACT SCIENCES
DEPARTMENT	MATHEMATICS
LEVEL OF STUDIES	UNDERGRADUATE

COURSE CODE	CE811	**SEMESTER**	H

COURSE TITLE	TIME SERIES ANALYSIS

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**ECTS**
Lectures	4	6

COURSE TYPE	Skills Development
PREREQUISITE COURSES	-
LANGUAGE OF TEACHING AND EXAMINATIONS	Greek/English
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	http://eclass.uowm.gr/

LEARNING OUTCOMES

Learning Outcomes

With this course, the students will gain knowledge and skills enabling them to:
- define notions such as stationarity,
- use econometric software packages (e.g. E-views) within the development of time series forecasting models,
- evaluate on time series models as well as their results,
- evaluate diagnostic test results,
- use models for time series forecasting.

General Competencies

- Search for, analysis and synthesis of data and information, with the use of the necessary technology.
- Decision making.
- Critical thinking practice.

CONTENT OF THE COURSE

This course focuses on time series analysis that constitute one of the important data types used in empirical analysis. The course aims to familiarize students in the Department of Economics with substantial statistical notions as well as the use of appropriate econometric techniques for the development of time series prediction models, by use of econometric software packages (e.g. E-views).
Suggested teaching sections:
- Introduction to time series
- Stochastic time series models and basic notions
- Autoregressive Models (AR)
- Moving Average Models (MA)
- ARMA Models
- ARIMA Models
- Diagnostic tests and model selection criteria
- Forecasting
- ARCH-GARCH models

TEACHING AND LEARNING METHODS - EVALUATION

TEACHING METHOD	In the classroom.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	Powerpoint presentations, Use of e-class. Communication through face-to-face discussions via e-mails and group discussion on the subject. Use of econometric software (e.g. E-views)

TEACHING ORGANIZATION	Activity	Semester Workload
	Lectures	52 hours
	Projects	26 hours
	Individual Study	72 hours

	Course Total (25 hours per ECTS)	150 hours

STUDENT EVALUATION	Written final examination (50%) comprising:
	  1. Multiple choice questions
	  2. Assessment on elements of theory
	  3. Exercise solving
	Individual laboratory project (50%).
	
	<u>Remarks:</u>
	Both the results on the assessment process and tests will be uploaded on the e-class website.	

RECOMMENDED BIBLIOGRAPHY

1. Dimeli S., Modern methods of time series analysis, AUEB Property Management & Development S.A., 2013. (Greek)
2. Asteriou D., Stephen H. Applied Econometrics, Propompos publications, Kimeris K. Thomas, 2018. (Greek)
3. Gujarati D., Basic econometrics, McGraw-Hill Higher Education 2003.

An indicative list of relative scientific journals:
- Econometrica
- Journal of Econometrics
- Econometric Reviews
- Journal of Time Series Analysis
- Journal of Time Series Econometrics
- Quantitative Finance
- Journal of Empirical Finance
- Econometrics Journal
- Journal of Applied Econometrics
- Advances in Econometrics
- Journal of Time Series Econometrics
- Econometrics (MDPI)
- Foundations and Trends in Econometrics
- International Journal of Computational Economics and Econometrics
- Applied Financial Economics