

Time Series Analysis

Course Outline

Academic Semester: 2025/26

1. General

School	School of Finance and Statistics		
Academic Unit	Department of Banking and Financial Management		
Level of Studies	Undergraduate		
Course Code	XPOAX01		
Semester	5th or 7th		
Course Title	Time Series Analysis		
Independent Teaching Activities	Weekly Teaching Hours	Credits	
Lectures	4	7,5	
Course Type	Special background		
Prerequisite Courses			
Language of Instruction and Examinations	Greek		
Is the course offered to Erasmus Students?	No		
Url (Eclass)	https://eclass.unipi.gr/modules/auth/courses.php?fc=64		

2. Learning Outcomes

Learning Outcomes

The course aims to highlight the necessity of modern econometric tools in the analysis of financial concepts and phenomena. Specifically, the understanding, application, and analysis of financial data constitute essential skills in the toolkit of the modern economist.

Upon successful completion of the course, students will be able to:

- Use a modern econometric software/tool,
- Analyze the statistical and econometric properties of models,
- Analyze financial data using statistical measures and graphical representations.

General Competences

- Search, analysis, and synthesis of data and information using the necessary technologies
- Independent work
- Work in an international environment
- Critical and self-critical thinking
- Promotion of free, creative, and inductive thinking

3. Syllabus

- Basic concepts of statistics (distributions, descriptive statistics)
- Types of data
- Returns and portfolio theory
- Regression analysis (ordinary least squares method, estimators, assumptions, standard error)
- Hypothesis testing

- Multiple linear regression (F-test, R^2)
- Principal Component Analysis (PCA)
- Problems in econometric models (diagnostics, correction) – Heteroscedasticity, Autocorrelation, Multicollinearity, Parameter Stability
- Univariate time series models
- Moving average models
- Autoregressive models
- ARMA models
- Modeling and forecasting

4. Teaching and Learning Methods - Evaluation

Delivery	Face-to-face												
Use of Information and Communications Technology	<p>-The electronic platform is used for uploading the lecture materials.</p> <p>-Lectures are conducted using a computer and econometric software/tool.</p>												
Teaching Methods	<table border="1"> <thead> <tr> <th style="text-align: center;">Activity</th> <th style="text-align: center;">Semester Workload</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Lectures</td> <td style="text-align: center;">52</td> </tr> <tr> <td style="text-align: center;">Independent Study</td> <td style="text-align: center;">58</td> </tr> <tr> <td style="text-align: center;">Laboratory Exercise</td> <td style="text-align: center;">40</td> </tr> <tr> <td style="text-align: center;">Writing an Assignment</td> <td style="text-align: center;">37,5</td> </tr> <tr> <td style="text-align: center;">Course Total</td> <td style="text-align: center;">187,5</td> </tr> </tbody> </table>	Activity	Semester Workload	Lectures	52	Independent Study	58	Laboratory Exercise	40	Writing an Assignment	37,5	Course Total	187,5
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Student Performance Evaluation	<ul style="list-style-type: none"> • Written final examination in the Greek language. The examination includes multiple-choice questions, comprehension questions on the material, and problem-solving exercises. • Midterm examination in the Greek language. • Assignment 												

5. Attached Bibliography

Suggested Bibliography

1. C. Brooks, Introductory Econometrics for Finance
2. Instructor's notes

Related Academic Journals