University of Gdańsk

Subject card

Subject name and code	Time Series Analysis II, PG_00204636		
Field of study	Informatics and Econometrics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	Master's studies	Subject group	Obligatory subject group in the field of study Optional subject group Subject group related to scientific research in the field of study
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	7.0
Learning profile	academic	Assessment form	exam
Conducting unit	Department of Econometrics -> Faculty of Management -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Marta Chylińska	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	15.0	30.0	0.0	0.0	60

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	60	4.0	111.0	175

Subject objectives

Introduction of students to the basic models of dynamic econometrics.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[IiEMU2_U03] Is able to obtain and verify data from properly selected sources and to collect, process, and visualize it using modern econometrics, informatics or statistics tools	The student is able to obtain financial time series of various frequencies from databases, verify their validity, and use the data to construct dynamic econometric models.	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[IiEMU2_W05] Possesses advanced knowledge and understanding of informatics, statistics, and econometrics techniques and tools used to acquire, process, or visualise data to aid in decision-making and verify research hypotheses	The student has a thorough knowledge and understanding of the issues in the field of dynamic econometrics.	[SW4] test/exam - oral or written
[IiEMU2_U01] Can creatively and profoundly analyze complex social and economic processes using structured knowledge, econometrics, informatics, or statistics tools	The student is able to select and construct appropriate models in the field of dynamic econometrics.	[SU2] presentation/project/paper/ report
[IiEMU2_W02] Comprehends advanced theoretical and practical concepts in econometrics, informatics, or statistics, which are essential for a deeper understanding of economic and social phenomena	The student has a thorough knowledge and understanding of the time series processing methods.	[SW4] test/exam - oral or written

<table>
<tr><td>Subject contents</td><td>1. Dynamic econometric models. Examples of dynamic relationships in economics and finance.
2. Basic tools of dynamic analysis: ACF and PACF functions, Ljung-Box statistic.
3. Single-equation linear models of stationary time series (AR, MA, ARMA).
4. Modeling seasonal phenomena (SARIMA models).
5. Modeling high-frequency financial processes. ARCH and GARCH models.
6. Models of non-stationary time series and their applications.
7. Spurious regression. The concept of cointegration of variables and methods of testing it. Univariate error correction model (ECM).
8. Multivariate time series models and their applications.
9. Analysis of relationships between selected economic and financial categories. VAR model.
10. Vector error correction model (VECM). Engle-Granger and Johansen procedures.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Basic knowledge of time series analysis.</td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Laboratory class assessment: team project and its presentation.</td><td>51.0%</td><td>30.0%</td></tr>
<tr><td>Assessment of auditorium classes: written test.</td><td>51.0%</td><td>40.0%</td></tr>
<tr><td>Lecture assessment based on a written exam.</td><td>51.0%</td><td>30.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>1. Osińska M. (2006), Ekonometria finansowa, Polskie Wydawnictwo Ekonomiczne.
2. Witkowska D., Matuszewska-Janica A., Kompa K. (2012), Wprowadzenie do ekonometrii dynamicznej i finansowej, Wydawnictwo SGGW.</td></tr>
<tr><td>Supplementary literature</td><td>1. Tsay R.S. (2012), An Introduction to Analysis of Financial Data with R., Wiley.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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