University of Gdańsk

Subject card

Subject name and code	Mathematical Economics, PG_00199298						
Field of study	Economics						
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 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	3.0			
Learning profile	academic		Assessment form	exam			
Conducting unit	Department of Microeconomics -> Faculty of Economics -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Małgorzata Zielenkiewicz				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	30.0	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		0.0	15.0	75	
Subject objectives	The aim of the course is to familiarize the student with the basics of modeling economic processes and phenomena using mathematical methods.						

Learning outcomes			
	Course outcome	Subject outcome	Method of verification
	[EKONMU2_K01] recognises the importance of knowledge in the field of economics in the process of identifying and solving economic problems and of consulting experts when having difficulties in solving them independently	The student recognizes the importance of knowledge in the field of mathematical economics in the process of identifying and solving economic problems.	[SK4] test/exam - oral or written
	[EKONMU2_W01] has an in-depth knowledge of the nature of social sciences and their place in the system of sciences; understands the differences between contemporary trends in economic thought; knows the claims of contemporary economic theories	The student has in-depth knowledge of the nature of economics, its connections with mathematics and the possibilities of using mathematics to model economic phenomena.	[SW4] test/exam - oral or written
	[EKONMU2_U02] can use acquired knowledge to describe and analyse the causes and course of economic and social processes and phenomena, and can formulate his/her own opinions and critically select data and analysis methods based on the achievements of economic and social sciences	The student is able to use the knowledge of mathematical economics to mathematically describe and analyze the course of economic processes and phenomena and is able to critically select data and analysis methods.	[SU4] test/exam - oral or written
	[EKONMU2_U01] can creatively interpret and explain economic and social phenomena and relations between them, using acquired knowledge of economics, finance and management sciences	The student is able to interpret and explain economic phenomena and the relationships between these phenomena, using her/his knowledge of mathematical economics.	[SU4] test/exam - oral or written
	[EKONMU2_K02] is aware of the level of their knowledge in the area of solving complex problems in economic,; understands the need to extend and update this knowledge throughout his/her life	The student is aware of the level of her/his knowledge in the area of mathematical economics and understands the need to deepen and update this knowledge throughout his/her life.	[SK1] oral statement/conversation/ discussion [SK4] test/exam - oral or written
	[EKONMU2_U04] can forecast and model complex economic and social processes using quantitative and qualitative methods and tools developed by economic sciences (including statistics and econometrics)	The student is able to model complex economic processes using quantitative methods and tools created by mathematical economics.	[SU4] test/exam - oral or written
	[EKONMU2_U08] can independently analyse economic and social phenomena and processes, and can perform a theoretically deepened assessment of such phenomena, using appropriately selected research method	The student is able to independently analyze economic phenomena and processes, has the ability to theoretically in-depth assessment of these phenomena, using an appropriately selected research method in the field of mathematical economics	[SU4] test/exam - oral or written

Subject contents	
	1. Demand theory 2. Decisions in conditions of risk and uncertainty 3. Game theory 4. Partial and general balance 5. Growth models
Prerequisites and co-requisites	Ability to apply knowledge acquired during higher education in the field of mathematics, macroeconomics and microeconomics.

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>test</td><td>51.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. A. Blajer-Gołębiewska, L. Czerwonka, E. Pankau, M. Zielenkiewicz: Ekonomia matematyczna w zadaniach, pod red. T. Kamińskiej, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk 2006.</td></tr>
<tr><td>Supplementary literature</td><td>1. A.C. Chiang: Podstawy ekonomii matematycznej, PWE 1994.

2. A. Ostoja - Ostaszewski: Matematyka w ekonomii. Modele i metody t. 1 i 2, Wydawnictwo Naukowe PWN, Warszawa 1996.

3. E. Panek: Ekonomia matematyczna, AE Poznań 2000.

4. E. Panek: Podstawy ekonomii matematycznej. Materiały do ćwiczeń, Wydawnictwo Akademii Ekonomicznej w Poznaniu, Poznań 2002.

5. W. Łyszkiewicz: Industrial organization. Organizacja rynku i konkurencja, Warszawa 2000.

6. D. Romer: Makroekonomia dla zaawansowanych, Wydawnictwo Naukowe PWN, Warszawa 2000.

7. M. Osborne, An Introduction to Game Theory, Oxford University Press, Oxford 2004.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2"></td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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