University of Gdańsk

Subject card

Subject name and code	Mathematical Applications in Economics and Management, PG_00044153		
Field of study	Economics		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	undergraduate studies	Subject group	Obligatory subject group 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	1	ECTS credits	4.0
Learning profile	academic	Assessment form	
Conducting unit	Katedra Mikroekonomii -> Faculty of Economics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Małgorzata Zielenkiewicz	
	Teachers	dr Małgorzata Zielenkiewicz	

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	30.0	0.0	0.0	0.0	30
	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	30	0.0	0.0	30

Subject objectives	Acquainting students with the introduction to higher mathematics and its applications in economics and management.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[EKONL3_U04] can predict and forecast the course of economic and social processes and phenomena	The student has the ability to apply mathematics in economics and management and to use mathematical methods in modeling and interpreting economic phenomena. Using elements of differential calculus, she/he can optimize functions of one and many variables in issues related to the theory of enterprise choice and market organization.	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written
[EKONL3_U02] is able to use the knowledge of theory and data to analyse concrete economic and social processes and phenomena and to analyse these phenomena using methods developed in economics, finance and management sciences	The student is able to analyze the causes and course of economic processes based on basic economic models.	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written [SU5] implementation of a problem task
[EKONL3_K05] correctly identifies, diagnoses and resolves professional dilemmas and different options for solutions	The student correctly identifies, diagnoses and solves dilemmas and possibilities regarding economic problems related to the use of mathematical methods	[SK1] oral statement/conversation/ discussion [SK4] test/exam - oral or written [SK5] implementation of a problem task
[EKONL3_W06] have an advanced knowledge of selected methods and tools, including statistical and econometric techniques, for describing economic agents and structures as well as social institutions and the processes taking place in them	The student has knowledge in the field of single and multivariable functions, elements of differential and integral calculus, unconditional and conditional optimization methods and their applications in business decision modeling, and. has basic knowledge related to modeling the dynamics of economic processes	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW5] implementation of a problem task

Subject contents

1. Matrix algebra2. Differential calculus3. Integral calculus

Prerequisites and co-requisites

Knowledge and skills in mathematics from high school

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
To receive a positive grade for the exercises, the student must obtain at least 51% of the total points for the activity, group work performed on computers, individual work tasks and final tests.	51.0%	100.0%

Recommended reading

Basic literature

1. E. Babula, L. Czerwonka (red.), Zastosowanie matematyki w ekonomii i zarządzaniu, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk 2015

2. A. Blajer-Gołębiewska, L. Czerwonka, E. Pankau, M. Zielenkiewicz, Ekonomia matematyczna w zadaniach, red. T. Kamińska, Wyd. UG, Gdańsk 2010

3. M. Wisniewski, Mathematics for economics, Palgrave Macmillan, 201

	Supplementary literature	1. K. Sydsaeter, P. Hammond, A. Seierstad, A. Strom, Further mathematics for economic analysis, FT Prentice Hall, Harlow 2005 2. B. Batóg, B. Bieszk-Stolorz, I. Foryś, M. Guzowska, K. Heberlein, Mathematics for students of economics, finance and management, Difin, Warszawa 2021 3. T. Bradley, Essential mathematics for economics and business, Wiley, 2013 4. A.C. Chiang, Podstawy ekonomii matematycznej, PWE, Warszawa 1994 5. L. Czerwonka, Matematyczne modele połączeń przedsiębiorstw uwzględniające czynniki menedżerskie, Pieniądze i Więź. Kwartalnik Naukowy, Nr 3/2009, s. 81-88 6. L. Czerwonka, Zastosowanie matematycznych modeli fuzji egzogenicznych, Pieniądze i Więź. Kwartalnik Naukowy, Nr 1/2008, s. 133-140 7. M. Matłoka, Matematyka dla ekonomistów, Wyd. AE w Poznaniu, Poznań 2008 8. A. Ostoja-Ostaszewski, Matematyka w ekonomii. Modele i metody t. 1 i 2, Wydawnictwo Naukowe PWN, Warszawa 2006 9. J. Piszczała, Matematyka i jej zastosowanie w naukach ekonomicznych, Wydawnictwo AE w Poznaniu, Poznań 2008 10. R.A. Barnett, M.R. Ziegler, K.E. Byleen, College Mathematics for Business, Economics, Life Sciences, and Social Sciences, Pearson Prentice Hall, Upper Saddle River, New Jersey 2008 r, New Jersey 2008
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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