

Subject card

Subject name and code	, PG_00156931						
Field of study	Finance and Accounting						
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 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			English	
Semester of study	1		ECTS credits			6.0	
Learning profile	academic		Assessment form				
Conducting unit	Katedra Ekonometrii -> Faculty of Management						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Marta Chylińska				
	Teachers		dr Marta Chylińska				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	0.0	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		16.0		74.0	150
Subject objectives	The aim of the course is to provide students with an understanding of the mathematical knowledge for finance and investment. The course gives students skills for implementation of the mathematical knowledge and expertise to the problems of finance and investment. Its prerequisites are both the knowledge of the single variable calculus and the foundations of linear algebra including operations on matrices and the general theory of systems of simultaneous equations.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[FiRL3_K01] Self-development: - understands the need for development and lifelong learning - is able to supplement and improve the acquired knowledge and skills - knows his strengths and weaknesses, sets ambitious goals to the best of his ability - knows how to accept failure and admit mistakes.	The student understands the need for development and learning when dealing with mathematical issues, knows his or her strengths and weaknesses, and is able to admit a mistake.	[SK3] text preparation/written work [SK5] implementation of a problem task
	[FiRL3_U02] The student can acquire data from various sources to analyze specific economic processes and phenomena related to finance. Is able to use information technologies.	The student is able to obtain data from various sources, which can use to solve economic problems.	[SU5] implementation of a problem task
	[FiRL3_W06] The student has advanced knowledge of methods and tools, including data acquisition and analysis techniques, appropriate to management science and quality, which allow describing economic structures and institutions and the processes within and between them.	The student knows advanced mathematical tools appropriate to the science of management and quality.	[SW4] test/exam - oral or written
	[FiRL3_K05] Responsibility: - meets deadlines - is able to properly identify priorities for the implementation of the task set by him - consistently strives to achieve the set goal - is able to work systematically and independently - observes the rules and norms of social coexistence.	The student is able to determine priorities for solving mathematical problems, is able to work systematically and independently to solve mathematical tasks.	[SK4] test/exam - oral or written [SK6] demonstration of practical skills
Subject contents	1. Matrix algebra: Matrices and Vectors, Matrix Operations, Commutative, Associative and Distributive Laws, Identity and Null Matrices, Transposes and Inverses, Conditions for Nonsingularity of a Matrix, Basic Properties of Determinants. 2. Linear Models and Matrix Algebra: Finding the Inverse Matrix, Cramers Rule, Application to Market and National-Income Models, Limitations of Static Analysis 3. Functions, Graphs, and Models: Functions and Models, Finding Domain and Range, Slope and Linear Functions, Nonlinear Functions and Models, Mathematical Modeling and Curve Fitting. 4. Differentiation: Limits: A Numerical and Graphical Approach, Algebraic Limits and Continuity, Average Rates of Change, Differentiation Using Limits of Difference Quotients, Differentiation Techniques: The Power and Sum/Difference Rules, Differentiation Techniques: The Product and Quotient Rules, The Chain Rule, Higher-Order Derivative. 5. Applications of Differentiation: Using First Derivatives to Find Maximum and Minimum Values and Sketch Graphs, Using Second Derivatives to Find Maximum and Minimum Values and Sketch Graphs, Graph Sketching: Asymptotes and Rational Functions, Using Derivatives to Find Absolute Maximum and Minimum Values, Maximum/Minimum Problems, Business and Economics Applications, Marginals and Differentials, Implicit Differentiation and Related Rates. 6. Integration: Antidifferentiation, Antiderivatives as Areas, Area and Definite Integrals, Properties of Definite Integrals, Integration Techniques Substitution and by Parts. 7. Applications of Integration: Consumer Surplus and Producer Surplus, Integrating Growth and Decay Models, Improper Integrals, Probability and Expected Value, The Normal Distribution.		
Prerequisites and co-requisites	Basic algebra concepts, such as properties of exponents, multiplying and factoring polynomials, equation solving.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	two written tests	51.0%	100.0%
Recommended reading	Basic literature	1. Bittinger M.L., Ellenbogen D.J., Surgent S.A., Calculus and its applications, Pearson Addison-Wesley, 2012 2. Gruber M.H.J., Matrix Algebra for Linear Models, Wiley, 2013	
	Supplementary literature	1. Chiang A.C., Fundamental methods of mathematical economics, McGraw-Hill, 1984.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		