GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Financial Mathematics, PG_00040560
Field of study	Engineering Management

Date of commencement of studies	October 2022	Academic year of realisation of subject	2023/2024
Education level	first-cycle 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	2	Language of instruction	Polish Polish
Semester of study	3	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Department of Finance -> Faculty of Management and Economics

Name and surname of lecturer (lecturers)	Subject supervisor	dr Piotr Kasprzak
	Teachers	dr Piotr Kasprzak

Lesson types and methods of instruction	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	6.0	39.0	75

Subject objectives	Identifies mathematical concepts and tools used in finance and banking

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U02] analyses economic problems, including financial ones in various areas of the organisation's functioning, also when formulating and solving engineering tasks	Selects appropriate mathematical methods and techniques to analyze financial problems	[SU1] Assessment of task fulfilment
	[K6_W11] has the basic knowledge of mathematics, physics and chemistry necessary to solve technical problems	Analyzes the impact of various factors influencing the studied phenomenon, striving to obtain an optimal solution	[SW1] Assessment of factual knowledge
	[K6_W06] has a basic knowledge of methods and tools for conducting research and analyses related to particular areas of the enterprise's operations and its environment	Is able to use mathematical tools in finance and economics	[SW3] Assessment of knowledge contained in written work and projects

Subject contents	Time value of money - introduction.Simple interest model (MOP), capital gains tax.Compound interest model (MOS) with annual, sub-period and continuous capitalization.Mathematical and commercial discount account.Valuation of short-term securities.Real value of capital, real interest rate.The basis for building an investment portfolio.Annuity account - without capitalization, with capitalization, equal, consistent and inconsistent.Construction of the loan repayment schedule, APR calculation.Valuation of long-term securities.Introduction to the valuation of derivatives using the example of options.

Prerequisites and co-requisites	Basic knowledge of the principles of mathematics.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	In-class performance	60.0%	80.0%
	Test	60.0%	20.0%

Recommended reading	Basic literature	Kellison, S. G. (2008). Theory of interest. New York: McGraw-Hill.Piasecki, K., Ronka-Chmielowiec W. (2011). Matematyka finansowa. Warszawa: C.H. Beck.Podgórska, M., Klimkowska, J. (2022). Matematyka finansowa. Warszawa: Wydawnictwo Naukowe PWN.Redo, M., Prewysz-Kwinto, P. (2021). Matematyka finansowa. Warszawa: Wydawnictwo Naukowe PWN.
	Supplementary literature	Borowski, J., Golański, R., Kasprzyk, K., Melon, L., Pogórska, M. (2003). Matematyka finansowa: przykłady, zadania, testy, rozwiązania. Wałbrzych: Szkoła Główna Handlowa.Cegłowski, B., Podgórski, B. (2021). Finanse z arkuszem kalkulacyjnym. Warszawa: Wydawnictwo Naukowe PWN.Sobczyk, M. (2011). Matematyka finansowa: podstawy teoretyczne, przykłady, zadania. Warszawa: Agencja Wydawnicza Placet.
	eResources addresses	Adresy na platformie eNauczanie: Matematyka finansowa Z I sem 3 "zima 2023/2024" - Moodle ID: 33705 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33705

Example issues/ example questions/ tasks being completed	Time value of money calculation.Calculation of the future value of investments.APR calculation.
Work placement	Not applicable

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