GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	FINANCIAL ENGINEERING, PG_00070611		
Field of study	Economics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2028/2029
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	3	Language of instruction	Polish
Semester of study	5	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Finance -> Faculty of Management and Economics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Ewa Mazurek-Krasodomska	
	Teachers		

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	3.0	17.0	50

Subject objectives

Preparation of students to use derivative instruments for reducing financial risk and designing hedging strategies, based on knowledge and skills in their valuation, as well as the development of attitudes related to responsibility in the context of corporate financial management.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_K02] is prepared to make competent and ethical decisions to create and maintain economic, social, and environmental values, demonstrating entrepreneurial actions.	is ready to make ethical and well-justified decisions using derivative instruments, with an awareness of the organization’s long-term economic and social objectives.	[SK5] Assessment of ability to solve problems that arise in practice
[K6_U05] leverages the knowledge acquired in the field of economics to solve challenging problems, achieving results that are economically and socially valuable.	is able to value derivative instruments (forwards/futures, options, swaps) using selected models, applying a method appropriate to the enterprise’s decision-making context.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools

Subject contents

Course content – exercises
1. The essence and application of financial engineering.
2. Derivatives and their classification.
3. Valuation of forward contracts for assets.
4. Foreign exchange forward / futures.
5. Commodity Forward / Futures.
6. Valuation of FRA contracts.
7. Valuation and construction of foreign exchange swaps.
8. Valuation and construction of interest rate swap contracts.
9. Valuation of options using the binomial model.
10. Black-Scholes model in option pricing.
11. Greek coefficients.
12. Options' strategies and examples of their use.
13. Exotic derivatives and their use.
14. Strategies for investing in derivative instruments.
15. The effectiveness of hedging strategies.

Prerequisites and co-requisites

<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>reflection journal</td><td>0.0%</td><td>10.0%</td></tr>
<tr><td>Two calculation-based tests with practical tasks</td><td>60.0%</td><td>90.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. Hull, J. (1997).Kontrakty terminowe i opcyjne. Wprowadzenie. Warszawa: WIG Press.
2. Hull, J. C.(2021). Zarządzanie ryzykiem instytucji finansowych. Warszawa: Wydawnictwo Naukowe PWN.
3. Jajuga. K. (2015). Inwestycje: instrumenty finansowe, aktywa niefinansowe, ryzyko finansowe, inżynieria finansowa. Warszawa: Wydawnictwo Naukowe PWN.
4. Jajuga, K. (red.). (2020). Zarządzanie ryzykiem . Warszawa: Wydawnictwo Naukowe PWN.</td></tr>
<tr><td>Supplementary literature</td><td>1. Bartkowiak, M. (2014). Instrumenty pochodne. Wprowadzenie do inżynierii finansowej. Poznań: Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu.
2. Pruchnicka-Grabias, I.(2021). Egzotyczne opcje finansowe. Systematyka, wycena, strategia. Warszawa: CeDeWu.
3. Weron, A., Weron, R. (2019). Inżynieria finansowa. Wycena instrumentów pochodnych. Symulacje komputerowe. Statystyka rynku. Warszawa: Wydawnictwo Naukowo-Techniczne.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">• Binomial method.
• Black-Scholes formula.</td></tr>
<tr><td>Practical activites within the subject</td><td colspan="2">Not applicable</td></tr>
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