

**FACULTY OF PURE AND APPLIED MATHEMATICS
SUBJECT CARD**

Name in Polish: Zarządzanie Ryzykiem Finansowym
Name in English: Financial Risk Management
Main field of study (if applicable): Applied Mathematics
Specialization (if applicable): Financial and Actuarial Mathematics
Level and form of studies: 2nd* level, full-time / ~~part-time~~*
Kind of subject: ~~obligatory~~ / optional / ~~university-wide~~*
Subject code
Group of courses YES / NO*

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	30	30			
Number of hours of total student workload (CNPS)	90	60			
Form of crediting	Examination				
For group of courses mark (X) final course	X				
Number of ECTS points	3	2			
including number of ECTS points for practical classes (P)	2	2			
including number of ECTS points corresponding to classes that require direct participation of lecturers and other academics (BU)	1,5	1,5			

*delete as not necessary

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Student has an elementary knowledge of financial markets and (discrete and continuous) models of financial mathematics

SUBJECT OBJECTIVES

C1 Learning and mastery of key concepts and methods in the field of financial mathematics

SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:

PEK_W01 knows the most important models and techniques of financial engineering

PEK_W02 knows the basics of stochastic and numerical modeling in financial engineering

relating to skills:

PEK_U01 can construct mathematical models used in financial engineering

relating to social competences:

PEK_K01 can by himself search for information in the literature, even in foreign languages

PROGRAMME CONTENT		
Form of classes – lecture		Number of hours
Lec 1	Fundamental theorems of asset pricing - overview	2
Lec 2	Greek parameters, delta/gamma hedging	2
Lec 3	Volatility modeling	2
Lec 4	Exotic options – overview	4
Lec 5	Stochastic control	2
Lec 6	Risk measures and financial risk	2
Lec 7	Portfolio pricing	2
Lec 8	Construction of optimal portfolio, effectiveness measures of investment portfolio	2
Lec 9	Measuring of default, asset and liability management and hedging strategies, immunization	2
Lec 10	Credit risk management	4
Lec 11	Operational risk management	2
Lec 12	Time variation in risk	2
Lec 13	Backtesting and stress testing	2
	Total hours	30
Form of classes - class		Number of hours
Cl 1	Illustration of all models.. Analytical and computer methods. Examples of pricing derivatives.	
	Total hours	30
TEACHING TOOLS USED		
<ol style="list-style-type: none"> 1. Lecture problem - traditional method. 2. Problem and counting exercises. 3. Consultations. 4. Student's self work - preparation for exercises. 		

EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT

Evaluation (F – forming during semester), P – concluding (at semester end)	Learning outcomes code	Way of evaluating learning outcomes achievement
F1	PEK_W01 PEK_W02 PEK_K01	exam
F2	PEK_U01 PEK_K01	oral responses, tests, small tests
P=0.5*F1+0.5*F2		

PRIMARY AND SECONDARY LITERATURE
<u>PRIMARY LITERATURE:</u> [1] [1] A. Weron, R. Weron (1998) Inżynieria finansowa, WNT [2] P. Jorion (2003) Financial risk manager handbook, Wiley.
<u>SECONDARY LITERATURE:</u> [3] P. Willmott (2006) On Quantitative Finance, Wiley. [4] A. J. McNeil R. Frey, P. Embrechts (2015) Quantitative Risk Management Concepts, Techniques and Tools, Princeton University Press.
SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)
Prof. dr hab. Zbigniew Palmowski (Zbigniew.Palmowski@pwr.edu.pl)