

**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: 1st/ 2nd* level, full-time /~~part-time~~*

Kind of subject: ~~obligatory~~ / optional / ~~university-wide~~*

Subject code MAT001565

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)	150				
Form of crediting	Examination / crediting with grade *	Examination / crediting with grade *	Examination / crediting with grade *	Examination / crediting with grade *	Examination / crediting with grade *
For group of courses mark (X) final course	X				
Number of ECTS points	5				
including number of ECTS points for practical (P) classes	2	2			
including number of ECTS points for direct teacher-student contact (BK) classes	1,5	1,5			

*delete as applicable

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.	30
	Total hours	30
TEACHING TOOLS USED		
N1. Lecture problem - traditional method. N2. Problem and counting exercises. N3. Consultations. N4. Student's self work - preparation for exercises.		
EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT		
Evaluation (F – forming (during semester), P – concluding (at semester end))	Educational effect number	Way of evaluating educational effect 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>		
<p>[1] A. Weron, R. Weron (1998) Inżynieria finansowa, WNT [2] P. Jorion (2003) Financial risk manager handbook, Wiley.</p>		
<u>SECONDARY LITERATURE:</u>		
<p>[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.</p>		
SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)		
Prof. dr hab. Zbigniew Palmowski (Zbigniew.Palmowski@pwr.edu.pl)		

**MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR
SUBJECT FINANCIAL RISK MANAGEMENT MAT001565
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY
APPLIED MATHEMATICS
AND SPECIALIZATION FINANCIAL AND ACTUARIAL
MATHEMATICS**

Subject educational effect	Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)**	Subject objectives***	Programme content***	Teaching tool number***
PEK_W01 (knowledge)	K2MST_W03 K2MST_fam_W01	C1	Lec 1-Lec 10	1, 3
PEK_W02	K2MST_W09 K2MST_fam_W02 K2MST_fam_W03	C1	Lec 1-Lec 10	1, 3
PEK_U01 (skills)	K2MST_U24 K2MST_U25 K2MST_fam_U01 K2MST_fam_U02 K2MST_fam_U03	C1	Cl 1	2, 3, 4
PEK_K01 (competences)	K2MST_K06 K2MST_fam_K01 K2MST_fam_K02	C1	Lec 1-Lec 10, Cl 1	1, 2, 3, 4

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above