Zał. nr 4 do ZW 64/2012

FACULTY OF PURE AND APPLIED MATHEMATICS
SUBJECT CARD

Name in Polish: ZARZĄDZANIE RYZYKIEM W UBEZPIECZENIACH
Name in English: Risk management in insurance
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 MAT001569
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 knows and can apply basic concepts of the probability theory
2. Student knows and can apply basic concepts of actuarial mathematics including life and non-life insurance.
3. Student knows and can apply basic concepts of reserving in life and non-life insurance mathematics

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SUBJECT OBJECTIVES

C1 Study of the classical concepts and acquisition of the knowledge of risk management in life and non-life insurance

SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:

PEK_W01 knows the most important concepts of risk management in life and non-life insurance mathematics

PEK_W02 knows principles of stochastic modeling in risk management

relating to skills:

PEK_U01 can construct mathematical models and apply methods used in risk management in life and non-life insurance mathematics

relating to social competences:

PEK_K01 can, without assistance, search for necessary information in the literature, also in foreign languages

PROGRAMME CONTENT

Form of classes - lecture		**Number of hours**
Lec 1	Risk management in insurance, actuarial function, risk management function	2
Lec 2	Capital management, risk appetite, risk measures (including RAROC, RORAC)	2
Lec 3	Solvency II: capital requirements, standard formula, internal models, risk categories	6
Lec 4	Profitability and risk exposure tests, monitoring of actuarial assumptions or parameters	4
Lec 5	Risk exposure reduction methods, methods and instruments of risk transfer including alternative risk transfers (ART)	4
Lec 6	Proportional and non-proportional reinsurance as method of risk exposure reduction	4
Lec 7	Actuarial pricing in life and non-life insurance, risk factors.	2
Lec 8	Application of derivatives in insurance	3
Lec 9	Pricing of catastrophe bonds.	3
	Total hours	**30**
Form of classes - project		**Number of hours**
Pr 1	Preparation and presentations of projects illustrating theory given in the lectures.	30
	Total hours	**30**

TEACHING TOOLS USED

N1. Lecture – traditional method and presentations
N2. Student partial project presentation and final presentation
N3. Consultations
N4. Student's self-work – work on the project development

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

Evaluation (F – forming (during semester), P –	Educational effect number	Way of evaluating educational effect achievement

concluding (at semester end)		
F1	PEK_W01 PEK_W02 PEK_K01	exam
F2	PEK_U01 PEK_K01	Partial project presentations, final project presentation
P=0.5*F1+0.5*F2		

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

[1] N. L. Bowers i inni, „Actuarial mathematics", The Society of Actuaries, Itasca, Illinois, 1997.
[2] H. U. Gerber, „Life insurance mathematics", Springer-Verlag, Berlin, 1997.
[3] C. D. Daykin i inni, „Practical risk theory for actuaries", Chapman & Hall, London, 1996.
[4] R. Kaas, M. Gooveaerts, J. Dhaene, M. Denuit „Modern actuarial Risk Theory", Springer-Verlag, Berlin Heidelberg, 2008.
[5] P.M. Booth, R. G. Chadburn, S. Haberman et al. „Modern actuarial theory and practice" 2nd ed.; Chapman & Hall, 2005
[6] M. V. Wüthrich, M. Merz,"Financial Modeling, Actuarial Valuation and Solvency in Insurance", Springer-Verlag Berlin Heidelberg, 2013.
[7] DIRECTIVE 2009/138/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II)

PRIMARY LITERATURE:

[1] L. Hölscher, P. Harding, G. M. Becker, „ Financing the Embedded Value of Life Insurance Portfolios", HfB – Working Paper Series, 2005.

SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

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MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT

ACTUARIAL METHODS IN RISK MANAGEMENT MAT001569

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 9	1,3
PEK_W02	K2MST_W09 K2MST_fam_W02 K2MST_fam_W03	C1	Lec 1- Lec 9	1,3
PEK_U01 (skills)	K2MST_U15 K2MST_U24 K2MST_U25 K2MST_fam_U01 K2MST_fam_U02 K2MST_fam_U03	C1	Pr 1	2,3,4
PEK_K01 (competences)	K2MST_K06 K2MST_fam_K01 K2MST_fam_K02	C1	Lec 1- Lec 9, Pr 1	1,2,3,4

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

*** - from table above