

Annex No. 3		Second Cycle Studies Subject Programme			
1.	Title of subject	Financial and actuarial mathematics			
2.	Code	MO504			
3.	Study programme	Management in insurance			
4.	Organizer of the study programme (university unit i.e., institute, chair, department)	Faculty of Economics - Skopje Ss. Cyril and Methodius University in Skopje			
5.	Level (first, second, third cycle)	Second cycle			
6.	Academic year / semester	2022/2023 1 st semester (winter)	7.	Number of ECTS credits	6
8.	Professor	Assoc. Prof. Igor Ivanovski, PhD			
9.	Preconditions for enrolment	Completed first cycle of studies with obtained minimum of 240 credits.			
10.	Course Objectives (Competencies): Students should be able to utilize the acquired knowledge and techniques in financial and actuary mathematics in the insurance industry.				
11.	Course contents: 1. Discrete and continuous process in financial operations 1.1. Interest calculation models 1.2. Relative, conformal and effective interest rate 1.3. Accumulated and initial value 1.4. Continuous compounding 2. Constant and variable periodic payments and disbursements 2.1. Models for determining the interest value of constant and variable periodic investments 2.2. Discounted value of a constant and variable periodic income 2.3. Models for determining the interest rate with continuous compounding 3. Technical basics of annuity and capital insurance 3.1. Annual and sub-annual annuities 3.2. Variable annuity 3.3. Single and multiple net and gross premium for capital insurance 4. Life insurance premium reserves 4.1. Concept and definition of premium reserves 4.2. Methods for individual and group calculation of premium reserves 5. Separate combined life insurance models 6. Social security systems.				
12.	Learning methods: interactive lectures with presentations, problem solving exercises, team projects, individual tasks, and home learning.				
13.	Total hours	6 ECTS x 30 classes = 180 hours			
14.	Distribution of the time at disposal	24+16+40+10+90=180 hours			
15.	Types of teaching activities	15.1.	Lectures	24 hours	
		15.2.	Tutorials (laboratory, auditory), seminars, teamwork	16 hours	
16.	Other types of activities	16.1.	Project assignments	40 hours	
		16.2.	Individual assignments	10 hours	
		16.3.	Self-study	90 hours	
17.	Assessment methods: combination of tests, individual and group assessments				60+30+10 = 100 points
	17.1.	Tests			60 points
	17.2.	Project assignments			30 points
	17.3.	Attendance and class participations			10 points
18.	Grading scale	up to 60 points		5 (five) (F)	

		from 61 to 68 points	6 (six) (E)			
		from 69 to 76 points	7 (seven) (D)			
		from 77 to 84 points	8 (eight) (C)			
		from 85 to 92 points	9 (nine) (B)			
		from 93 to 100 points	10 (ten) (A)			
19.	Preconditions for taking the final exam	Realized activities from items 15 and 16				
20.	Language	Macedonian/English				
21.	Evaluation method	Student questionnaire and other methods for continual selfevaluation.				
22.	Literature					
	22.1.	Mandatory literature				
		No.	Author	Title	Publisher	Year
		1.	Drage Janev	<i>“Financial and actuary mathematics“</i>	Faculty of Economics - Skopje	2015
		2.	Newton L. Bowers JR., Hans U. Gerber, James C. Hickman, Donald A. Jones, Cecil J. Nesbitt	<i>Actuarial Mathematics</i>	The Society of Actuaries	1986
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Hans U. Gerber	<i>Life Insurance Mathematics, 3ed.</i>	Springer	1997
		2.	Drage Janev, Igor Ivanovski	<i>Actuary models in the life insurance</i>	Faculty of Economics - Skopje	2014