Type and level of studi	es: Ph	D Studies						
Title of the study program: (D03) Economics								
Subject title: Financial Mathematics 1D								
Subject code: DFIM								
Number of ECTS: 9								
Subject status (Compulsory / Elective): elective								
Teacher/s (Name, last name): Jelena Kočović, Ljiljana Petrović, Branko Urošević								
Number of active teach	Number of active teaching lessons: Other lessons							
Lectures: Prac	tice	Other forms of	Study research work:					
3 per week class	es:	teaching:	3 per week					
Prerequisite:								
Subject objective:								
The aim of the course is the analysis of complex phenomena on derivatives market by applying the								
general theory of randor	n proc	esses, which proved to be 1	nost suitable for quantification o	f risks affecting				
price movements in this	segm	ent of financial market.						
Subject outcome (gain	ed kno	owledge):						
Education of staff that will, thanks to the knowledge acquired in the field of stochastic financial								
mathematics, be able to	resear	ch the most complex pheno	omena of price determination on	derivatives				
markets as well as to per	rform	their application in practice	ð.					
Subject content/struct	ure:							
1 Deterministic theory	£ :							
1 Deterministic theory of	n inter							
- traditional theory of co	mple	model						
- Cash now model, an		model						
- determining bond price	es on of	share prices						
- models for determination of share prices								
2 Stochastic Financial Analysis								
- an introduction to martingates								
- stochastic model of fin	- stochastic integrals and differential equations							
- determination of prices of American and European options								
- price structure of futures and forwards								
3. Stochastic theory of interest								
- interest rate model (discrete and continuous)								
- binomial "Tree" model								
- arbitral bond prices								
- options and swaps								
4. Dynamic Portfolio Theory								
- investment portfolio and its optimization								
- "CAPM model"								
- "ALM model"								
Teaching methods:								
Lectures, mentoring, presentations, essays, papers, tests, etc.								
Grading (maximum number of points 100)								
Pre-examination obligation	ations	Points	Final exam	Points				
Activities during lectur	res		Written exam					
Practice lessons			Oral exam	60				
Colloquium/a								

Study research work		40					
Literature:							
No.	Author	Title	Publisher	Year			
1.	Capinski M., Zastawniak T	Mathematics for Finance (an introduction to financial engineering)	Springer	2005			
2.	Bjork, T.	Arbitrage theory in continuous time	Oxford University Press	2004			
3.	Brigo, D. and Mercurio, F.	Interest rate models: theory and practice	Springer	2001			
4.	Broverman, S. A.	Mathematics of investment and credit	Winsted, CT: Actex	2004			
5.	Butcher, M. V.; Nesbitt, C. J.	Mathematics of compound interest	Michigan: Ulrich's Books	1971			
6.	Elliott, R.J. and Kopp, P.E.	Mathematics of Financial Markets	Springer	1999			