Study programme(s): Applied Mathematics (MB)	

Level: master

Course title: Financial Mathematics 2 (MB-06)

Lecturer: Nataša Krejić

Status: obligatory for MB, module Financial mathematics

ECTS: 7

Requirements:

Learning objectives
The objective of this course is to introduce the concept of mathematical models as an important tool in finances. The aim is to provide knowledge for understanding the models of portfolio analysis and the models of pricing financial derivatives, to develop modelling skills in the area of finances.

Learning outcomes
The student will be able to apply the risk models to real data, to understand the meaning of the results obtained and to perform investment analysis of complex financial instruments.

Syllabus
Theoretical instruction: Mean variance portfolio analysis. CAP Model. APT model. Utility Functions. The Arrow-Debreu securities. Financial derivatives. Forwards and futures. Options. Binomial model for option pricing. Continuous model for option pricing - Black - Scholes formula. VaR and CVar. Coherent Risk Measures.
Practical instruction: Practical exercises based on theoretical instructions. The exercises are performed on the blackboard, as well as in using software.

Literature
1. Luenberger, Investment Science, Oxford University Press, New York, 1997.
2. J. C. Hull, Options, Futures and Other Derivatives, Prentice Hall, 2003
3. Roman, Steven: Introduction to the Mathematics of Finance. Springer-Verlag, New York [etc.], 2004.
4. Cvitanic, J., Zapaterro, F., Introduction to the Economics and Mathematics of Financial Markets, MIT Press, 2004.

Weekly teaching load				Other:
Lectures: 4	Exercises: 2	Other forms of teaching:	Student research:	

Teaching methodology
Lectures followed by exercises and students' work.

Grading (total number of points 100)			
Pre-exam obligations	points	**Final exam**	points
practical problems		oral exam	50
tests		written exam	
colloquia	50		