UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Izbrana poglavja iz finančne matematike
Course title:	Topics in financial mathematics

Študijski program in stopnja **Study programme and level**	**Študijska smer** **Study field**	**Letnik** **Academic year**	**Semester** **Semester**
3MaFi	Matematika	1 ali 2	prvi ali drugi
3MaFi	Mathematics	1 or 2	first or second

Vrsta predmeta / Course type	izbirni
Univerzitetna koda predmeta / University course code:	M3122

Predavanja **Lectures**	**Seminar** **Seminar**	**Vaje** **Tutorial**	**Klinične vaje** **work**	**Druge oblike** **študija**	**Samost. delo** **Individ.** **work**	**ECTS**
30					**150**	**6**

Nosilec predmeta / Lecturer:	prof. Janez Bernik, prof. Mihael Perman

Jeziki / Languages:	**Predavanja / Lectures:**	slovenski/Slovene, angleški/English
	Vaje / Tutorial:	slovenski/Slovene, angleški/English

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites:**

Vsebina:	**Content (Syllabus outline):**

Izbrane bodo nekatere standardne teme iz podiplomske finančne matematike. Možna poglavja so: -Stohastična integracija. -Stohastične diferencialne enačbe. -Vrednotenje opcij. -Stohastična optimalna kontrola. -Optimalno ustavljanje in ameriške opcije Izbira je odvisna od interesov in raziskovalne usmeritve študentov.	The content consists of a selection of standard topics in advanced financial mathematics. Possible chapters are: -Stochastic integration. -Stochastic differential equations. -Valuation of options. -Stochastic optimal control. -Optimal stopping and American options. The choice depends on students' research interests.

Temeljni literatura in viri / Readings:

I. Karatzas, S. E. Shreve, Methods of Mathematical Finance, Springer, 1998

D. Revuz, M. Yor, Continuous Martingales and Brownian Motion, Third Edition, Springer, 1999.

I. Karatzas, S. E. Shreve, Brownian Motion and Stochastic Calculus, Springer, 1988.

T Björk, Arbitrage Theory in Continuous Time, 3rd edition, Oxford, 2009.

Cilji in kompetence:	Objectives and competences:
Namen predmeta je seznaniti študente z nekaterimi pomembnimi temami finančne matematike.	The main goal of the course is to provide students with some important topics in financial mathematics.

Predvideni študijski rezultati:	Intended learning outcomes:
Znanje in razumevanje predstavljenih konceptov. Sposobnost uporabe pridobljenega znanja in spretnosti.	Knowledge and comprehension of presented concepts. Ability to use acquired knowledge and skills.

Metode poučevanja in učenja:

Predavanja, konzultacije, reševanje problemov

Learning and teaching methods:

Lectures, consultations, problem sessions

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Pisni izpit (domače naloge), ustni izpit Ocene: 1-5 (negativno), 6-10 (pozitivno)	100 %	Writen exam (homeworks), oral exam Grading: 1-5 (fail), 6-10 (pass)

Reference nosilca / Lecturer's references:

Janez Bernik:

– BERNIK, Janez, MASTNAK, Mitja, RADJAVI, Heydar. Realizing irreducible semigroups and real algebras of compact operators. Journal of mathematical analysis and applications, ISSN 0022-247X. [Print ed.], 2008, vol. 348, no. 2, str. 692-707. [COBISS.SI-ID 14899289]

– BERNIK, Janez, MARCOUX, Laurent W., RADJAVI, Heydar. Spectral conditions and band reducibility of operators. Journal of the London Mathematical Society, ISSN 0024-6107, 2012, vol. 86, no. 1, str. 214-234. [COBISS.SI-ID 16357721]

– BERNIK, Janez, MASTNAK, Mitja. Lie algebras acting semitransitively. Linear Algebra and its Applications, ISSN 0024-3795. [Print ed.], 2013, vol. 438, iss. 6, str. 2777-2792. [COBISS.SI-ID 16553561]

Mihael Perman:

– PERMAN, Mihael, WELLNER, Jon A. On the distribution of Brownian areas. Annals of applied probability, ISSN 1050-5164, 1996, let. 6, št. 4, str. 1091-1111 [COBISS.SI-ID 7101017]

– PERMAN, Mihael. An excursion approach to Ray-Knight theorems for perturbed Brownian motion. Stochastic Processes and their Applications, ISSN 0304-4149. [Print ed.], 1996, let. 63, str. 67-74 [COBISS.SI-ID 7621465]

– PERMAN, Mihael, WELLNER, Jon A. An excursion approach to maxima of the Brownian bridge. Stochastic Processes and their Applications, ISSN 0304-4149. [Print ed.], 2014, vol. 124, iss. 9, str.

3106-3120 [COBISS.SI-ID 17154393]