UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2016/17)	
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**
Doktorski študijski program Matematika in fizika	Matematika	1 ali 2	prvi ali drugi
Doctoral study programme Mathematics and Physics	Mathematics	1 or 2	first or second

Vrsta predmeta / Course type	izbirni / elective
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. dr. Janez Bernik, prof. dr. 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:**
Vpis v letnik študija.	Enrolment in the programme.

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:	**Learning and teaching methods:**
Predavanja, konzultacije, reševanje problemov	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:

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]

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. 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, 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]