

UČNI NAČRT PREDMETA / COURSE SYLLABUS							
<b>Predmet:</b>		Izbrana poglavja iz finančne matematike					
<b>Course title:</b>		Topics in financial mathematics					
<b>Študijski program in stopnja</b> Study programme and level		<b>Študijska smer</b> Study field		<b>Letnik</b> Academic year		<b>Semester</b> Semester	
3MaFi		Matematika		1 ali 2		prvi ali drugi	
3MaFi		Mathematics		1 or 2		first or second	
<b>Vrsta predmeta / Course type</b>				izbirni			
<b>Univerzitetna koda predmeta / University course code:</b>				M3122			
<b>Predavanja</b> Lectures	<b>Seminar</b> Seminar	<b>Vaje</b> Tutorial	<b>Klinične vaje</b> work	<b>Druge oblike študija</b>	<b>Samost. delo</b> Individ. work	<b>ECTS</b>	
30					150	6	
<b>Nosilec predmeta / Lecturer:</b>		prof. Janez Bernik, prof. Mihael Perman					
<b>Jeziki / Languages:</b>		<b>Predavanja / Lectures:</b>		slovenski/Slovene, angleški/English			
		<b>Vaje / Tutorial:</b>		slovenski/Slovene, angleški/English			
<b>Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:</b>				<b>Prerequisites:</b>			
<b>Vsebina:</b>				<b>Content (Syllabus outline):</b>			

<p>Izbrane bodo nekatere standardne teme iz podiplomske finančne matematike. Možna poglavja so:</p> <ul style="list-style-type: none"> <li>-Stohastična integracija.</li> <li>-Stohastične diferencialne enačbe.</li> <li>-Vrednotenje opcij.</li> <li>-Stohastična optimalna kontrola.</li> <li>-Optimalno ustavljanje in ameriške opcije</li> </ul> <p>Izbira je odvisna od interesov in raziskovalne usmeritve študentov.</p>	<p>The content consists of a selection of standard topics in advanced financial mathematics. Possible chapters are:</p> <ul style="list-style-type: none"> <li>-Stochastic integration.</li> <li>-Stochastic differential equations.</li> <li>-Valuation of options.</li> <li>-Stochastic optimal control.</li> <li>-Optimal stopping and American options.</li> </ul> <p>The choice depends on students' research interests.</p>
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**Temeljni literatura in viri / Readings:**

<p>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.</p>
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**Cilji in kompetence:**

<p>Namen predmeta je seznaniti študente z nekaterimi pomembnimi temami finančne matematike.</p>
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**Objectives and competences:**

<p>The main goal of the course is to provide students with some important topics in financial mathematics.</p>
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**Predvideni študijski rezultati:**

<p>Znanje in razumevanje predstavljenih konceptov.  Sposobnost uporabe pridobljenega znanja in spretnosti.</p>
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**Intended learning outcomes:**

<p>Knowledge and comprehension of presented concepts.  Ability to use acquired knowledge and skills.</p>
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**Metode poučevanja in učenja:**

Predavanja, konzultacije, reševanje problemov

**Learning and teaching methods:**

Lectures, consultations, problem sessions

Delež (v %) /

**Načini ocenjevanja:**

Weight (in %)

**Assessment:**

Pisni izpit (domače naloge), ustni izpit Ocene: 1-5 (negativno), 6-10 (pozitivno)	100 %	Written exam (homeworks), oral exam Grading: 1-5 (fail), 6-10 (pass)
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**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]