UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2017/18)			
Predmet:	Verjetnost 1		
Course title:	Probability 1		

Študijski program in stopnja **Study programme and level**	**Študijska smer** **Study field**	**Letnik** **Academic year**	**Semester** **Semester**
Univerzitetni študijski program Finančna matematika	ni smeri	2	prvi
First cycle academic study programme Financial Mathematics	none	2	first

Vrsta predmeta / Course type	obvezni / compulsory

Univerzitetna koda predmeta / University course code:	M0360

Predavanja **Lectures**	**Seminar** **Seminar**	**Vaje** **Tutorial**	**Klinične vaje** **work**	**Druge oblike** **študija**	**Samost. delo** **Individ. work**		**ECTS**
30		30			90		5

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

Jeziki / **Languages:**	**Predavanja /** **Lectures:**	slovenski / Slovene
	Vaje / Tutorial:	slovenski / Slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites:**
Vpis v letnik študija.	Enrolment in the programme.

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

Osnove kombinatorike.	Basic combinatorics.
Množice izidov, dogodki, verjetnost.	Outcome space, events, probability.
Pogojna verjetnost, formula za popolno verjetnost, neodvisnost.	Conditional probability, formula for total probability.
Diskretne slučajne spremenljivke, porazdelitve.	Discrete random variables, distributions.
Večrazsežne diskretne porazdelitve.	Joint discrete distributions.
Funkcije diskretnih slučajnih spremenljivk.	Functions of discrete random variables.
Pričakovana vrednost in varianca za diskretne slučajne spremenljivke.	Expectation and variance for discrete random variables.
Pogojne porazdelitve, pogojna pričakovana vrednost.	Conditional distributions, conditional expectation.
Zvezne slučajne spremenljivke, gosotota, pričakovana vrednost.	Continuous random variables, densities, expectation.
Rodovne in momentno rodovne funkcije.	Generating and moment generating functions.

Temeljni literatura in viri / Readings:

D. Stirzaker, Probability and Random Variables, A beginner's guide, Cambridge University Press, 1999.

G. Grimmett and D. Stirzaker, Probability and Random Processes, Third Edition, Oxford University Press, 1982.

Cilji in kompetence: **Objectives and competences:**

Finančna matematika temelji na verjetnosti. Tečaj uvaja osnovne koncepte iz verjetnosti, ki so izhodišče za številne ostale predmete.	Financial mathematics is based on probability theory. This course introduces basic concepts of probability needed for applications.

Predvideni študijski rezultati:

Intended learning outcomes:

Razumevanje koncepta modeliranja z matematičnimi koncepti verjetnosti, zmožnost učinkovitega računanja s slučajnimi spremenljivkami in njihovimi porazdelitvami.	Understanding basic concepts of probability and the ability to do calculations with random variables and distributions effectively.

Metode poučevanja in učenja:

Learning and teaching methods:

Predavanja, vaje.	Lectures, problem sessions.

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
2 kolokvija ali pisni izpit, ustni izpit Ocene: 1-5 (negativno), 6-10 (pozitivno) (po Statutu UL)	100 %	2 midterms or written exam, oral exam Grading: 1-5 (fail), 6-10 (pass) (according to the Statute of UL)

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]