

UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2017/18)						
Predmet:		Izbrana poglavja iz verjetnosti in statistike				
Course title:		Topics in probability and statistics				
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:				M3118		
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):		

<p>Izbrane bodo nekatere standardne teme iz podiplomske verjetnosti in statistike. Možna poglavja so:</p> <ul style="list-style-type: none"> - Konvergenca slučajnih spremenljivk. - Pogojna pričakovana vrednost in pogojne porazdelitve. - Martingali - Brownovo gibanje - Ocenjevanje parametrov, optimalnost. - Priežkušanje domnev, optimalnost. - Asimptotske lastnosti cenilk in testov. <p>Izbira je odvisna od interesov in raziskovalne usmeritve študentov.</p>	<p>The content consists of a selection of standard topics in advanced probability and statistics. Possible topics are:</p> <ul style="list-style-type: none"> - Convergence of random variables. - Conditional expectation and conditional distributions. - Martingales. - Brownian motion. - Parameter estimation, optimality. - Hypothesis testing, optimality. - Asymptotic theory <p>The choice depends on students' research interests.</p>
---	---

Temeljni literatura in viri / Readings:

<p>R. Durrett, Probability: Theory and Examples, Second Edition, Duxbury Press, 1996.</p> <p>S. R. S. Varadhan, Probability Theory, American Math. Soc., 2001.</p> <p>S. M. Ross, Stochastic Processes, Wiley, 1996</p> <p>J. Bertoin, Lévy Processes, Cambridge University Press, 1996.</p> <p>M. J. Schervish, Theory of Statistics, Springer, 1995.</p> <p>J. Shao, Mathematical Statistics, 3rd edition, Springer, 2007.</p>
--

Cilji in kompetence:

Objectives and competences:

Namen predmeta je seznaniti študente z nekaterimi pomembnimi temami verjetnosti in statistike.

The main goal of the course is to provide students with some important topics in probability and statistics.

Predvideni študijski rezultati:

Znanje in razumevanje predstavljenih konceptov.
Sposobnost uporabe pridobljenega znanja in spretnosti.

Intended learning outcomes:

Znanje in razumevanje predstavljenih konceptov.
Sposobnost uporabe pridobljenega znanja in spretnosti.

Metode poučevanja in učenja:

Predavanja, konzultacije, reševanje problemov

Learning and teaching methods:

Lectures, consultations, problem sessions

Načini ocenjevanja:

Pisni izpit (domače naloge), ustni izpit.
Ocene: 1-5 (negativno), 6-10 (pozitivno)

Delež (v %) /
Weight (in %)

100 %

Assessment:

Written 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]