

UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2016/17)						
Predmet:		Verjetnostni račun in statistika				
Course title:		Probability and statistics				
Študijski program in stopnja Study programme and level		Študijska smer Study field		Letnik Academic year	Semester Semester	
Interdisciplinarni univerzitetni študijski program Računalništvo in matematika		ni smeri		3	prvi in drugi	
Interdisciplinary first cycle academic study programme Computer Science and Mathematics		none		3	first and second	
Vrsta predmeta / Course type				obvezni / compulsory		
Univerzitetna koda predmeta / University course code:				27216		
Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
60		60			180	10
Nosilec predmeta / Lecturer:				prof. dr. Roman Drnovšek, 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.		
Opravljena predmeta Analiza 1 in Analiza 2.				Completed courses Analysis 1 and Analysis 2.		
Vsebina:				Content (Syllabus outline):		

definicija verjetnosti	definition of probability
pogojna verjetnost	conditional probability
slučajne spremenljivke in vektorji	random variables and vectors
diskretne in zvezne porazdelitve	discrete and continuous distributions
matematično upanje	expectation
dispersija, kovarianca in korelacijski koeficient	variance, covariance and correlation coefficient
višji momenti in vrstilne karakteristike	higher moments and order statistics
pogojna porazdelitev in pogojno matematično upanje	conditional distribution and conditional expectation
rodovne funkcije, momentno rodovne funkcije	generating functions, moment-generating functions
zakoni velikih števil	laws of large numbers
centralni limitni izrek	central limit theorem
uvod v statistiko	introduction to statistics
vzorčne statistike in cenilke	sample statistics and estimators
intervali zaupanja	confidence intervals
testiranje statističnih hipotez	testing statistical hypotheses
linearna regresija	linear regression
prilagoditveni testi	goodness of fit tests
neparametrični testi	nonparametric tests

Temeljni literatura in viri / Readings:

Hladnik M.: Verjetnost in statistika, Založba FE in FRI, Ljubljana, 2002, ISBN: 961-6209-34-5, 140 str.

Jamnik R.: Matematična statistika, DZS Ljubljana, 1980, 408 str.

Jamnik R.: Verjetnostni račun in statistika, DMFA Slovenije, Ljubljana, 1986, 156 str.

Grimmett G. R., Stirzaker D. R.: Probability and random processes, Second edition, The Clarendon

Press, Oxford University Press, New York, 1992, 541 str.

Cilji in kompetence:

Predstaviti osnove teorije verjetnosti in njeno uporabo v statistiki.

Objectives and competences:

Introduction to probability theory and its applications in statistics.

Predvideni študijski rezultati:

Razumevanje teoretičnih konceptov v številnih primerih uporabe. Zmožnost razpoznavanja verjetnostnih in statističnih vsebin v drugih vedah (fizika, ekonomija, finance, aktuarstvo, medicina, biologija, industrijska statistika).

Intended learning outcomes:

Understanding of theoretical concepts in various applications. The ability to recognize probabilistic and statistical concepts in other sciences (physics, economics, finance, actuarial science, medicine, biology, industrial statistics).

Metode poučevanja in učenja:

Predavanja, vaje, domače naloge.

Learning and teaching methods:

Lectures, exercises, homeworks.

Načini ocenjevanja:

pisni izpit, teoretični test ali ustni izpit

Delež (v %) /

Weight (in %)

Assessment:

written examination, theoretical test or oral exam

Reference nosilca / Lecturer's references:

Roman Drnovšek:

DRNOVŠEK, Roman. Triangularizing semigroups of positive operators on an atomic normed Riesz

space. Proceedings of the Edinburgh Mathematical Society, ISSN 0013-0915, 2000, let. 43, št. 1, str. 43-55. [COBISS.SI-ID 9480281]

DRNOVŠEK, Roman. Common invariant subspaces for collections of operators. Integral equations and operator theory, ISSN 0378-620X, 2001, vol. 39, no. 3, str. 253-266. [COBISS.SI-ID 10597721]

DRNOVŠEK, Roman. An infinite-dimensional generalization of Zenger's lemma. Journal of mathematical analysis and applications, ISSN 0022-247X. [Print ed.], 2012, vol. 388, iss. 2, str. 1233-1238. [COBISS.SI-ID 16214617]

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, SENEGAČNIK, Andrej, TUMA, Matija. Semi-Markov models with an application to power-plant reliability analysis. IEEE transactions on reliability, ISSN 0018-9529, 1997, vol. 46, no. 4, str. 526-532. [COBISS.SI-ID 2567707]

PERMAN, Mihael, PITMAN, Jim, YOR, Marc. Size-biased sampling of Poisson processes and excursions. Probability theory and related fields, ISSN 0178-8051, 1992, 92, no. 1, str. 21-39. [COBISS.SI-ID 12236377]