

UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2016/17)						
Predmet:		Statistika				
Course title:		Statistics				
Študijski program in stopnja Study programme and level		Študijska smer Study field		Letnik Academic year	Semester Semester	
Visokošolski strokovni študijski program Praktična matematika		ni smeri		2	drugi	
First cycle professional study programme Practical Mathematics		none		2	second	
Vrsta predmeta / Course type				obvezni / compulsory		
Univerzitetna koda predmeta / University course code:				M0425		
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. 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.		
Vsebina:				Content (Syllabus outline):		

<p>Opisne statistike: povprečja, standardni odkloni, kovariance.</p> <p>Grafične predstavitve podatkov: histogrami, razsevni grafikoni, QQ-diagrami.</p> <p>Vzorčenje: uvodni primeri, vzorčni načrt, vzorčna porazdelitev, standardna napaka, interval zaupanja.</p> <p>Regresijski modeli: predpostavke regresijskega modela, ocenjevanje parametrov, napovedovanje, regresijski modeli kot raziskovalno orodje.</p> <p>Preizkušanje domnev: osnovne ideje, testne statistike in njihove porazdelitve, p-vrednosti, primeri uporabe.</p>	<p>Descriptive statistics: mean, standard deviation, covariance.</p> <p>Graphical representation of data: histograms, charts, QQ-diagrams. Sampling: introductory examples, sampling design, sampling distribution, standard error, confidence interval. Regression models: linear regression model, parameter estimation, prediction, regression models as a research tool. Testing the hypothesis: the basic idea of the test statistics and their distributions, p-values, examples.</p>
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Temeljna literatura in viri / Readings:

<p>D. Freedman, R. Pisani, R. Purves: Statistics, 3rd Edition, Norton, 2003.</p> <p>M. Hladnik: Verjetnost in statistika, zapiski s predavanj, Fakulteta za računalništvo in informatiko, 2002.</p> <p>J. Rice: Mathematical Statistics and Data Analysis, 2nd Edition, Duxbury press, 1996.</p> <p>R. Scheaffer, M. Gnanadesikan, A. Watkins, J. A. Witmer: Activity Based Statistics, Springer, 1996.</p>

Cilji in kompetence:

<p>Študenti bodo utrdili znanje iz verjetnostnega računa. Sposobni bodo nastaviti matematične modele in jih uporabljati v dejanskih situacijah.</p>

Objectives and competences:

<p>Students will consolidate knowledge of probability theory. They will be able to set up mathematical models and apply them to the actual situations.</p>
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Predvideni študijski rezultati:

<p>Znanje in razumevanje:</p> <p>Koncepti statistike so po eni strani utrjevanje konceptov iz verjetnosti, po drugi strani pa gre za eno najbolj uporabnih vej matematike, saj</p>
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Intended learning outcomes:

<p>Knowledge and understanding: Statistics is one of the most useful branches of mathematics, because it is an effective data analysis.</p> <p>Application: Statistics is a useful tool in almost</p>

gre za učinkovito in dobro podkrepljeno analizo podatkov.

Uporaba:

Statistika je del orodjarne na skoraj vsakem področju, kjer nastopajo podatki in je potrebno priti do zaključkov na podlagi teh podatkov. To velja tako za naravoslovne vede kot tudi za vede kot so ekonomija, zavarovalništvo in finance.

Refleksija:

Predmet utrjuje znanje iz verjetnosti in utrjuje povezavo med matematiko in njenimi uporabami.

Prenosljive spretnosti – niso vezane le na en predmet: Sposobnost matematičnega modeliranja in analiza podatkov z uporabo abstraktnih modelov.

every area where conclusions are based on some data. This applies to both the natural sciences and the other sciences such as economics, insurance, and finance.

Reflection:

The subject consolidates knowledge of probability and strengthens the connections between mathematics and its applications.

Transferable skills:

The ability of mathematical modeling and data analysis using abstract models.

Metode poučevanja in učenja:

predavanja, vaje, domače naloge, konzultacije

Learning and teaching methods:

Lectures, exercises, homeworks, consultations

Načini ocenjevanja:

Delež (v %) /

Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt):

izpit iz vaj (2 kolokvija ali pisni izpit)

ustni izpit

Ocene: 1-5 (negativno), 6-10 (pozitivno) (po Statutu UL)

50%

50%

Type (examination, oral, coursework, project):

2 midterm exams instead of written exam, written exam

oral exam

Grading: 1-5 (fail), 6-10 (pass) (according to the Statute of UL)

Reference nosilca / Lecturer's references:

Roman Drnovšek:

DRNOVŠEK, Roman. Spectral inequalities for compact integral operators on Banach function spaces. *Mathematical proceedings of the Cambridge Philosophical Society*, ISSN 0305-0041, 1992, let. 112, str. 589-598. [COBISS.SI-ID 8169561]

DRNOVŠEK, Roman. On invariant subspaces of Volterra-type operators. *Integral equations and operator theory*, ISSN 0378-620X, 1997, let. 27, št. 1, str. 1-9. [COBISS.SI-ID 7038553]

DRNOVŠEK, Roman. A generalization of Levinger's theorem to positive kernel operators. *Glasgow mathematical journal*, ISSN 0017-0895, 2003, vol. 45, part 3, str. 545-555. [COBISS.SI-ID 12825945]

Mihael Perman:

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, WERNER, Wendelin. Perturbed Brownian motions. *Probability theory and related fields*, ISSN 0178-8051, 1997, let. 108, št. 3, str. 357-383. [COBISS.SI-ID 7848537]

KOMELJ, Janez, PERMAN, Mihael. Joint characteristic functions construction via copulas. *Insurance. Mathematics & economics*, ISSN 0167-6687, 2010, vol. 47, iss. 2, str. 137-143. [COBISS.SI-ID 16242777]