

UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2016/17)						
<b>Predmet:</b>		Analiza in vizualizacija podatkov				
<b>Course title:</b>		Data analysis and visualization				
<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	
Interdisciplinarni magistrski študijski program Računalništvo in matematika		ni smeri		1 ali 2	prvi ali drugi	
Interdisciplinary Master's study programme Computer Science and Mathematics		none		1 or 2	first or second	
<b>Vrsta predmeta / Course type</b>				izbirni / elective		
<b>Univerzitetna koda predmeta / University course code:</b>				M2845		
<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	15	30			105	6
<b>Nosilec predmeta / Lecturer:</b>		doc. dr. Alen Orbanić, prof. dr. Alexander Simpson				
<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>		
Vpis v letnik študija.				Enrolment in the programme.		
<b>Vsebina:</b>				<b>Content (Syllabus outline):</b>		

mere različnosti	similarity measures
izbrane metode multivariatne analize podatkov	methods of multivariate data analysis, a selection
analiza simbolnih podatkov	analysis of symbolic data
analiza velikih podatkovij	analysis of large datasets
prikazi podatkov	data visualization

### Temeljni literatura in viri / Readings:

Van Cutsem B.(Ed.): Classification and Dissimilarity Analysis (LNS 93). Springer, 1994.

Carroll, J.D., Green, P.E., Chaturvedi, A. Mathematical Tools for Applied Multivariate Analysis. Academic Press, 1997.

Berthold M., Hand D.J. (Eds.): Intelligent Data Analysis. Springer, 2007.

Billard L., Diday E.: Symbolic Data Analysis. Wiley, 2006.

Abello J., Pardalos P.M., Resende M.G. (Eds.): Handbook of Massive Data Sets (Massive Computing). Springer, 2002.

Rajaraman A., Leskovec J., Ullman J.D.: Mining Massive Datasets. CUP, 2013.

<http://infolab.stanford.edu/~ullman/mmds.html>

White T.: Hadoop. O'Reilley, 2011.

Wilkinson L.: The Grammar of Graphics (Statistics and Computing). Springer, 2005.

Ware C.: Information Visualization. Morgan Kaufmann, 2004.

Tufte E.R.: The Visual Display of Quantitative Information. Graphics Press, 2001.

### Cilji in kompetence:

Študentje se bodo seznanili z novejšimi metodami analize in prikazov podatkov in njihovim matematičnim ozadjem, se usposobili za njih samostojno uporabo ter po potrebi za razvoj lastnih rešitev.

### Objectives and competences:

The goal of the course is to introduce some modern methods for data analysis and visualization with their theoretical background, and to enable the students to use these methods by themselves or also to develop their own solutions.

### Predvideni študijski rezultati:

### Intended learning outcomes:

Znanje in razumevanje:  
Poznavanje in razumevanje osnovnih pojmov in postopkov analize in vizualizacije podatkov.

Poznavanje in usposobljenost za izbiro in uporabo programske podpore za izbrane metode.

Usposobljenost za ustrezno tolmačenje dobljenih rezultatov

Knowledge and understanding:  
Understanding of basic concepts and methods of data analysis and visualization

Ability to select the right methods for data analysis and visualization and perform them using appropriate software tools.

Ability to interpret the obtained results.

**Metode poučevanja in učenja:**

Predavanja, domače naloge, projektno delo, konzultacije, samostojni študij

**Learning and teaching methods:**

Lectures, homeworks, home reading, project, consultations

		Delež (v %) / Weight (in %)	Assessment:
<b>Načini ocenjevanja:</b>			
Način (pisni izpit, naloge, projekt):			Type (examination, coursework, project):Continuing (homework and seminar)Final (project work)
Sprotno preverjanje (domače naloge in seminar)			Grading: 6-10 pass, 1-5 fail (according to the rules of University of Ljubljana)
Končno preverjanje (projekt)	50%		
Ocene: 6-10 pozitivno, 1-5 negativno (v skladu s Statutom UL)	50%		

**Reference nosilca / Lecturer's references:**

Alen Orbanić:

ORBANIĆ, Alen. Tools for networks. V: ALHAJJ, Reda (ur.), ROKNE, Jon (ur.). Encyclopedia of social network analysis and mining. New York: Springer, cop. 2014, str. 2166-2175, ilustr. [COBISS.SI-ID 17145433]

ŠIROK, Brane, BIZJAN, Benjamin, ORBANIĆ, Alen, BAJCAR, Tom. Mineral wool melt fiberization on a spinner wheel. Transactions of the Institution of Chemical Engineers. Part A, Chemical engineering research and design, ISSN 0263-8762, 2014, vol. 92, issue 1, str. 80-90, ilustr. [COBISS.SI-ID

13057819]

BIZJAN, Benjamin, ORBANIĆ, Alen, ŠIROK, Brane, KOVAČ, Boštjan, BAJCAR, Tom, KAVKLER, Iztok. A computer-aided visualization method for flow analysis. *Flow measurement and instrumentation*, ISSN 0955-5986. [Print ed.], Aug. 2014, vol. 38, str. 1-8, ilustr. [COBISS.SI-ID 13484571]

Alex Simpson:

Alex Simpson:

EGGER, Jeff, MØGELBERG, Rasmus Ejlers, SIMPSON, Alex. The enriched effect calculus: syntax and semantics. *Journal of logic and computation*, ISSN 0955-792X, 2014, vol. 24, iss. 3, str. 615-654. [COBISS.SI-ID 17090137]

EGGER, Jeff, MØGELBERG, Rasmus Ejlers, SIMPSON, Alex. Linear-use CPS translations in the enriched effect calculus. *Logical methods in computer science*, ISSN 1860-5974, 2012, vol. 8, iss. 4, paper 2 (str. 1-27). [COBISS.SI-ID 17090905]