

## Specification for the book of courses

<b>Study program</b>		Computing and Informatics		
<b>Module</b>		Data Science		
<b>Type and level of studies</b>		Master studies		
<b>The name of the course</b>		Natural Language Processing		
<b>Lecturer (for lectures)</b>		Stojković R. Suzana		
<b>Lecturer/associate (for exercises)</b>		Marković M. Ivica		
<b>Lecturer/associate (for OFE)</b>				
<b>Number of ECTS</b>		4	<b>Course status (obligatory/elective)</b>	Elective
<b>Prerequisites</b>				
<b>Course objectives</b>				
The goal of this course is to introduce students to the basic concepts and ideas of the Natural Language Processing (NLP) and with applications of these concepts in information extraction, information retrieval systems, sentiment analysis, question answering systems, text summarization ...				
<b>Course outcomes</b>				
After completing this course the student acquires theoretical and practical knowledge necessary for development of applications based on natural language processing.				
<b>Course outline</b>				
<b>Theoretical teaching</b>				
Introduction to NLP. Text tokenizing. Word normalization: stemming and lematization. Type errors correcting, minimum edit distance algorithm. Sentence segmentation. Statistical language models. N-gram model. Part-of-speech tagging. Syntax analysis. CKY algorithm. Semantic analysis. Syntax-directed semantic analysis. Semantic grammars. Information extraction. Applications based on natural language processing. Sentiment analysis. Question answering systems. Machine translation. Text summarization.				
<b>Practical teaching (exercises, OFE, study and research)</b>				
Introduction to existing open-source tools for processing the data written in a natural language and for data conversion from unstructural form (text) to structural convenient for further processing.				
<b>Textbooks/references</b>				
1	D. Jurafsky and J. H. Martin: Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistic and Speech Recognition, Second Edition, McGraw Hill, 2009.			
2	S. Bird, E. Klein, E.: Natural Language Processing With Python, O'REILLI 2009.			
3	ppt presentations from lectures			
4				
5				
<b>Number of classes of active education per week during semester/trimester/year</b>				
<b>Lectures</b>	<b>Exercises</b>	<b>OFE</b>	<b>Study and research work</b>	<b>Other classes</b>
2	1	0		
<b>Teaching methods</b>				
Lectures, auditory exercises, consultations				
<b>Grade (maximum number of points 100)</b>				
<b>Pre-exam duties</b>		<b>Points</b>	<b>Final exam</b>	<b>Points</b>
<b>Activity during lectures</b>			<b>Written exam</b>	
<b>Exercises</b>		20	<b>Oral exam</b>	40
<b>Colloquia</b>				
<b>Projects</b>		40		