

<b>Study Programme: Information Systems Engineering</b>			
<b>Course Unit Title: Big Data Systems</b>			
<b>Course Unit Code: IZMI04</b>			
<b>Name of Lecturer(s): Ristić Sonja, Čeliković Milan</b>			
<b>Type and Level of Studies: master</b>			
<b>Course Status (compulsory/elective): elective</b>			
<b>Semester (winter/ summer): winter</b>			
<b>Language of instruction: english</b>			
<b>Mode of course unit delivery (face-to-face/distance learning): face-to-face</b>			
<b>Number of ECTS Allocated: 4</b>			
<b>Prerequisites: none</b>			
<b>Course Aims:</b> The course provides students with the knowledge of methods and techniques used for storage, access, analysis and mining of Big Data.			
<b>Learning Outcomes:</b> Upon completing this course successfully, students will be able to efficiently use contemporary systems aimed at storage, access, analysis and mining of big structured and unstructured data collections. Students will be skilled to use and develop storage and processing systems of big data, based on several technologies like Hadoop and High Performance Computing Platform (HPCC).			
<b>Syllabus.</b> Storage, scalability and availability of big data. CAP theorem, ACID vs. BASE database features. Alternate database systems (NoSQL). NoSQL database systems: properties, advantages and challenges. Classification and comparison of NoSQL databases. Key-value databases. Column-oriented databases. Graph-oriented databases. Document databases. Temporal and spatial databases. Data mining basic concepts. MapReduce and HPCC approach to parallel and distributed processing. Data stream analysis, clustering techniques, discovering association rules, recommendation systems, social network graphs analysis, dimensionality reduction techniques, machine learning techniques for big data. The theoretical instruction will be accompanied by the practical training focused on the use of solutions in the domain of big data based on Hadoop and HPCC technologies.			
<b>Required Reading:</b> Relevant literature in English, tbd			
<b>Weekly Contact Hours:2</b>	<b>Lectures: 2</b>	<b>Practical work: 0</b>	
<b>Teaching Methods:</b> Lectures; Study and research work; Consultations; Individual work on required assignments. Students are encouraged to communicate, to participate in critical discussions; to work independently and to be actively involved in teaching process.			
<b>Knowledge Assessment (maximum of 100 points):</b>			
<b>Pre-exam obligations</b>	points	<b>Final exam</b>	points
Attendance			
Computer exercises			
Tests (4x)			

