

Study program: Multimedia communication technologies			
Course title: Distribution systems			
Professor/assistant: Dušan M. Stefanović, Ph. D			
Type of course: elective			
ECTS credits: 7			
Pre-requisites: none			
Aims of the course: The goal of the course is student familiarization with the design principles in building information system using the latest tools and algorithms in distributed systems. Introduction to the basic terminology in the field of designing distributed databases, methodology of system design and data models. Understanding the terms of load balancing, clusters, competition, replication and transactions.			
Learning outcomes: Methodologies for designing information systems at the conceptual and implementation level and organization of distributed dynamic databases. Student will be able to discuss about advantages and disadvantages various architectures for distributed system implementation with deep knowledge of computer clusters, clustered virtualization, cloud architecture, and virtualized data centers and cloud computing models (Hadoop, Dryad, Google App Engine, Amazon AWS, Microsoft Azure).			
Syllabus <i>Theoretical part</i> Modern distributed systems. Distributed system architecture, motivation, problems and consequences, possible solutions, physical distribution of logically unique information system architecture. Distributed system concept, basic preconditions and unique communication system (database servers, application servers, clients, other I/O (peripheral) devices). Competitive objects. Consistency model. Clusters. Load balancing. Migration and data replication. Types of distributed databases. Two-layer, three-layered and multilayer architectures. Distributed information system architecture, logic level, logic database scheme, physical layer, communication system. Distributed BP Management Systems. Cloud and security of distributed systems <i>Practical part</i>			
Literature 1. Ozsu, Valduries, “ <i>Principles of Distributed Database Systems</i> “, 3.ed, Springer, 2011 2. Kai Hwang, Geoffrey C. Fox, Jack J. Dongarra, “ <i>Distributed and Cloud Computing: From Parallel Processing to the Internet of Things</i> “, Elsevier, 2012, ISBN: 978-0-12-385880-1.			
Number of active classes			Other forms of teaching:
Lectures: 30	Practical classes: 30	Research work:	
Teaching methods Combination of interactive approach with practical problem solving.			
Grading system (maximum 100 points), grading scale from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade 7 from 61-70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.			
Pre-exam obligations	points	Final exam	points
activity during theoretical lectures	10	written exam	30
practical training	20	oral exam	
colloquium(s)/seminar papers	40		
Sum	70	Sum	30