

Study Programme: Computer Science – Master			
Course Unit Title: Enterprise Systems Development			
Course Unit Code: CS501			
Name of Lecturer(s): Srđan Škrbić			
Type and Level of Studies: Master Academic Degree			
Course Status (compulsory/elective): Compulsory			
Semester (winter/summer): Winter			
Language of instruction: English			
Mode of course unit delivery (face-to-face/distance learning): Face-to-face			
Number of ECTS Allocated: 8			
Prerequisites: None			
Course Aims: The main objective of this course is to provide practical overview of component based development and its relationship to the object-oriented approach. Service oriented architecture is studied as prevailing approach to the component based development. EJB 3 technology, especially its aspects related to this topic, is introduced, together with development of distributed systems using web services. Cloud computing options are considered at the end of the course.			
Learning outcomes <i>Minimal:</i> At the end of the course, it is expected that students show clear understanding of theoretical concepts of component based development and be capable to apply appropriate techniques of implementation using EJB 3 technology. Besides, it is expected that students are capable of applying basic technologies related to web services. <i>Desirable:</i> At the end of the course, it is expected that a successful student shows ability to critically discuss key concepts in component based development and influence of this topic to modern trends in business computing and software engineering. Additionally, detailed knowledge of aspects of EJB 3 technology that allow development of applications based on components and service oriented architecture. Additionally, detailed knowledge of all studied technologies and specifications related to web services, as well as knowledge of their use in development of complex applications is expected.			
Syllabus <i>Theoretical instruction</i> Theoretical background of component based development, architecture of software based on components, relation to object-oriented approach, service oriented architecture. Basic concepts of EJB 3 technology, EJB 3 messaging, development of web services using EJB 3 technology, EJB 3 security. The course continues with web services, both SOAP and RESTful based, and their usage in development of distributed systems. Options related to usage of cloud computing in such scenarios are considered at the end of the course. <i>Practical instruction</i> Analysis of case studies through use of EJB technology and web services, Eclipse development environment and WildFly application server. Individual work on a comprehensive case study.			
Required Reading: 1. Debu Panda, Reza Rahman, Ryan Cuprak, "EJB 3 in Action", 2 nd edition Manning, 2012. 2. Javid Jamae, Peter Johnson, "JBoss in Action", Manning, 2009. 3. Alan W. Brown, "Large-Scale, Component-Based Development", Prentice Hall, 2000. 4. George Coulouris, Jean Dollimore, Tim Kindberg, Gordon Blair, "Distributed Systems: Concepts and Design", 5th edition, Addison Wesley, 2011. and Component-based Development: Using Select Perspective and UML", Addison-Wesley, 2003. 5. Vlada Matena, Sanjeev Krishnan, Linda DeMichiel, Beth Stearns, "Applying Enterprise JavaBeans: Component-Based Development for the J2EE Platform, Second Edition", Addison Wesley, 2003. 6. Andrew Lee Rubinger, Bill Burke, "Enterprise JavaBeans 3.1", O'Reilly, 2010.			
Weekly Contact Hours: 5	Lectures: 2	Practical work: 3	
Teaching Methods: During theoretical classes classical methods of teaching with the use of a projector are used to present stated topics. On practical classes, classical methods of teaching with the use of a projector are used to analyze case studies and practically master the skills of usage of suggested tools. Students expand their knowledge by investigating every stated topic and test it through two colloquia that are related to the work on an individual case study.			
Knowledge Assessment (maximum of 100 points): 100			
Pre-exam obligations	points	Final exam	points
Colloquia	50	oral exam	50