

Study programmes: PhD studies - Informatics			
Course name: R490 - Software development - advanced concepts			
Lecturers: Vladimir Filipović, Miroslav Marić and other lecturers from Department for Computer Science and Informatics			
Status: Optional			
ECTS: 9			
Attendance prerequisites: There are no prerequisites			
Course aims: Acquisition of general and specific knowledge about software development theory and principles, about modern solutions and state-of-the-art approaches in this areas.			
Course outcome: After completing the course, the student has an advanced knowledge about software development process, software architecture, architecture types, design and implementation, functionalities and maintenance. The student fully understands all aspect of software development and works on open problems in this area.			
Course content: - Software architecture. Ideas and techniques. - Architecturing, design and development of complex software systems. - Software project management. - Traditional and agile software processes. - Analysis, architecturing, design, implementation, testing, deployment. - Software metrics. - Software development methodologies. - Renginengineering. Design patterns. Refactoring. Domain driven development. - Containers and microservices.			
Literature: 1. E. Gamma, R. Helm, R. Johnson, J. Vlissides: Design Patterns - Elements of Reusable Object-Oriented Software, Addison-Wesley, Reading, 1995. 2. W. Crawford, J. Kaplan: J2EE Design Patterns, O'Reilly, 2003. 3. M. Fowler: Refactoring – Improving the Design of Existing Code, Addison - Wesley, 2002. 4. C. Horstmann, G. Cornell, Core Java 2, Volume II – Advanced Features, Sun Microsystems, 2008. 5. Hemrajani Amil: Agile Java™ Development With Spring, Hibernate and Eclipse, Sams Publishing, 2006. 6. I. Sommerville: Software Enginnering, Addison-Wesley, 2011. 7. E. Evans: Domain-Driven Design: Tackling Complexity in the Heart of Software, Addison-Wesley, 2003. 8. C. de la Torre, B. Wagner, M. Rousos: .NET Microservices: Architecture for Containerized .NET Applications, Microsoft press, 2017. (teacher can some select other adequate books)			
Number of hours: 10	Lectures: 4	Tutorials: -	Laboratory: -
Research: 6			
Teaching and learning methods: Frontal, group, individual and practical.			
Assessment (maximal 100 points)			
Course assignments	points	Final exam	points
Lectures	-	Written exam	-
Exercises / Tutorials	-	Oral exam	40
Colloquia	-	Written-oral exam	-
Essay / Project	60		