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| <b>Study Programme:</b> Ph.D. in Computer Science   |                    |                          |        |
| <b>Course Unit Title:</b> System Development  |                    |                          |        |
| <b>Course Unit Code:</b> ID013  |                    |                          |        |
| <b>Name of Lecturer(s):</b> Mirjana Ivanović, Srđan Škrbić  |                    |                          |        |
| <b>Type and Level of Studies:</b> Doctoral Academic Degree  |                    |                          |        |
| <b>Course Status (compulsory/elective):</b> Elective  |                    |                          |        |
| <b>Semester (winter/summer):</b> Winter   |                    |                          |        |
| <b>Language of instruction:</b> Serbian (primary), English (secondary)  |                    |                          |        |
| <b>Mode of course unit delivery (face-to-face/distance learning):</b> Face-to-face  |                    |                          |        |
| <b>Number of ECTS Allocated:</b> 7  |                    |                          |        |
| <b>Prerequisites:</b> None  |                    |                          |        |
| <b>Course Aims:</b><br>The objective is the synthesis and taxonomy of many techniques of (software) systems development. The methodological aspects of development are also covered.  |                    |                          |        |
| <b>Learning outcomes</b><br>At the end of the course it is expected from a successful student to be able to: <ul style="list-style-type: none"> <li>- critically asses and research key concepts in software system development</li> <li>- critically asses alternatives in system development, dependant on the requirements</li> <li>- apply research methods in the field of system development</li> </ul>   |                    |                          |        |
| <b>Syllabus</b><br>Review of research in this field: theoretical bases, elements, software tools - CASE (Computer-aided software engineering) tools and components. Current trends in the research area, for example. Model-Driven Development MDD, aspect-oriented programming, methodologies for developing agent systems. Overview of different development frameworks and platforms, security and testing of software systems. Domain-specific languages. Artifact based system development.  |                    |                          |        |
| <b>Required Reading:</b> <ol style="list-style-type: none"> <li>1. Len Bass, Rick Kazman, Paul Clements, Software Architecture in Practice, Addison Wesley, second edition.</li> <li>2. UML 2.1.1, <a href="http://www.omg.org/technology/documents/formal/uml.htm">http://www.omg.org/technology/documents/formal/uml.htm</a></li> <li>3. OMG Model Driven Architecture, <a href="http://www.omg.org/mda">http://www.omg.org/mda</a></li> <li>4. Bordini, R.H., Dastani, M., Dix, J., Seghrouchni, A.E.F. (Eds.): Multi-Agent Programming: Languages, Tools and Applications, Springer (2009)</li> </ol> |                    |                          |        |
| <b>Weekly Contact Hours:</b> 2  | <b>Lectures:</b> 2 | <b>Practical work:</b> 0 |        |
| <b>Teaching Methods:</b><br>Lectures are organized using classic teaching methods with use of a projector. Students independently explore various research topics, present and discuss results with other students and the lecturer.  |                    |                          |        |
| <b>Knowledge Assessment (maximum of 100 points): 100</b>  |                    |                          |        |
| <b>Pre-exam obligations</b>   | points             | <b>Final exam</b>        | points |
| Seminar paper   | 60                 | oral exam                | 40     |