

<b>Study programmes:</b> PhD studies - Informatics				
<b>Course name:</b> R469 - Genetic algorithms				
<b>Lecturers:</b> Dušan Tošić, Vladimir Filipović, Miroslav Marić and other teachers from Department for Computer Science and Informatics				
<b>Status:</b> Optional				
<b>ECTS:</b> 9				
<b>Attendance prerequisites:</b> There are no prerequisites				
<b>Course aims:</b> Making student capable to develop and to use different scientific and professional techniques based on genetic algorithms.				
<b>Course outcome:</b> Upon finishing this course, student is capable to design and apply genetic algorithms in order to efficiently solve various optimization problems.				
<b>Course content:</b> - History and development of genetic algorithms. <ul style="list-style-type: none"> <li>- Simple genetic algorithm.</li> <li>- Genetic algorithm coding.</li> <li>- Genetic operators: recombination, mutation and selection.</li> <li>- Genetic algorithm modifications based on the usage of operators.</li> <li>- Schema theorem.</li> <li>- Fitness landscape.</li> <li>- Applications of genetic algorithm.</li> <li>- Parallel genetic algorithm.</li> <li>- Comparison among genetic algorithms and other optimization techniques.</li> </ul>				
<b>Literature:</b> <ol style="list-style-type: none"> <li>1. Melanie Mitchell: An introduction to Genetic Algorithms, MIT Press, 1999.</li> <li>2. S.N.Sivanandam, S.N.Deepa: An introduction to Genetic Algorithms, Springer, 2008.</li> <li>3. R. Haupt, S. Haupt: Practical Genetic Algorithms, John Willey and Sons, 2014.</li> <li>4. G. Rozenberg, T. Back, J. N. Kok: Handbook of Natural Computing, Springer, 2012.</li> </ol> <p>(teacher can some select other adequate books)</p>				
<b>Number of hours:</b> 10	<b>Lectures:</b> 4	<b>Tutorials:</b> -	<b>Laboratory:</b> -	<b>Research:</b> 6
<b>Teaching and learning methods:</b> Frontal, group, individual and practical.				
<b>Assessment (maximal 100 points)</b>				
<b>Course assignments</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>	
Lectures	-	Written exam	-	
Exercises / Tutorials	-	Oral exam	40	
Colloquia	-	Written-oral exam	-	
Essay / Project	60			