

<b>Name:</b> <b>Machine Intelligence</b>		<b>NEPTUN-code:</b> <i>NMXGIISMNE</i>	<b>Number of periods/week:</b> full-time: 3 lec + 0 sem + 0 lab
<b>Credit:</b> 4 <b>Requirement:</b> exam		<b>Prerequisite:</b> -	
<b>Responsible:</b> Márta TAKÁCS, Ph.D.	<b>Position:</b> associate professor	<b>Faculty and Institute name:</b> John von Neumann Faculty of Informatics Institute of Applied Mathematics	
<b>Way of assessment:</b> – written exam			
<b>Competences</b>			
<b>Course description:</b>			
Fuzzy sets, fuzzy quantities, fuzzy numbers. Triangular norms. Triangular conorms. Operations of fuzzy sets. Linguistic variables. Fuzzy implication operators. Zadeh extension principle. Possibility and necessity. Averaging operators. Compositional rule of implication. Simplified fuzzy inference. Neural networks. Perceptron learning rule. Delta learning rule with linear transfer function. Delta learning rule with semilinear transfer function. Generalized delta rule. Kohonen's rule. Approximation capability of multilayer neural networks. Fuzzy neural networks. Approximating functions with fuzzy neural networks. Fine tuning shape parameters of fuzzy sets with neural networks. ANFIS architecture for the Takagi-Sugeno scheme. Sensitivity analysis of fuzzy neural networks.			
<b>Literature</b>			
R. Fullér: Introduction to Neuro-Fuzzy Systems, Advances in Soft Computing Series, Springer-Verlag, Berlin/Heidelberg, 2000 Stuart J. Russell, Peter Norvig: Artificial Intelligence, A Modern Approach, Prentice Hall, 1995 (electronic notes) Nils J. Nilsson: The quest for artificial intelligence a history of ideas and achievements, web version, 2010 (electronic notes)			