

Prerequisite status: Advanced geographic information system Database management Digital earth models	Unit Type: Theoretical/practical	The number of units: 2	Name of the lesson: Artificial intelligence algorithms
Type of additional practical training: Has it <input checked="" type="checkbox"/> does not have <input type="checkbox"/> Science travel <input type="checkbox"/> Laboratory <input checked="" type="checkbox"/> Workshop <input type="checkbox"/> Seminar <input type="checkbox"/>		The number of hours: 51	Expert professor to teach: Artificial intelligence algorithms
Goals: Getting to know the methods of making the geographic information system smarter by using artificial intelligence algorithms			
Headlines 1- Basic definitions and concepts of artificial intelligence 2- History of artificial intelligence 3- Artificial neural networks (concepts, types, single layer, and multilayer perceptron networks, Fault backpropagation networks, Radial neural networks with RBF, Recurrent networks, Hopfield networks, Self-organizing maps or SOMs, Development trends and approaches of neural networks) 4- Applications of artificial neural networks in GIS 5- Genetic algorithm (evolutionary and genetic algorithms, structure or stages of genetic algorithm, genetic algorithm operators) 6- Applications of genetic algorithm in GIS 7- Intelligent agents (definitions, types, and how they interact with the environment, agent programming) 8- Applications of intelligent agents in GIS			
Reference 1- Soudabeh, Pourzaker Arabani, 2006, concepts of artificial intelligence and artificial neural networks and genetic algorithm, Nedaya Sabz North 2- Russell Start and Peter Noving, 2020, Artificial Intelligence: A Modern Approach (Pearson Series in Artificial Intelligence) 4th Edition			