RTU Course "Artificial Intelligence in Business"

33000 Faculty of Computer Science, Information Technology and Energy

General data

Code	DE0743
Course title	Artificial Intelligence in Business
Course status in the programme	Compulsory/Courses of Limited Choice
Responsible instructor	Ilze Andersone
Volume of the course: parts and credits points	1 part, 6.0 credits
Language of instruction	LV, EN
Annotation	Artificial intelligence includes rather new technologies that can be used to solve complex business problems in different domains. The information technology specialist must be able to select the most suitable artificial intelligence technologies for business problems. The main topic is their usage for practical business problem solving. Different programming approaches are reviewed to show origins of the agent oriented programming and differences from other approaches. Overview of various types of agents and their applications is given in the course. Intelligent mechanisms, like planning, knowledge representation, inference and machine learning are covered, too. Already developed agent projects are analysed illustrating what types of agents are suitable for what projects. Algorithms used in artificial intelligence and their implementations as well as the agent oriented software engineering process are covered in the practical part of the course.
Goals and objectives of the course in terms of competences and skills	The goal of the course is to give understanding of the advanced artificial intelligence technologies and abilities to apply these technologies to solve various complex business problems. The main objectives of the course are the following: To acquire different programming approaches, especially the agent oriented programming. To study intelligent agents and multi-agent systems, their development and applications, as well as to be able to apply agents and multi-agent systems to solve various business problems. To study various artificial intelligence solutions and know their applicability.
Structure and tasks of independent studies	Students have to carry out independent analysis of already developed agent projects using available literature and software developed in the projects. Independent studies have two goals. Firstly, the student has an opportunity to study the latest applications of intelligent agents. Secondly, he/she learns, how to analyse the available literature during the research.
Recommended literature	Obligātā / Obligatory: 1. Russell S., Norvig P. Artificial Intelligence: A Modern Approach. 4th edition – New Jersey: Prentice – Hall, 2020 2. Wooldridge M. „An introduction to Multiagent Systems". – Chichester, England: John Wiley & Sons, 2002, 348 p. Papildu / Additional: 1. Bonaccorso, Giuseppe. Machine learning algorithms. Packt Publishing Ltd, 2017.
Course prerequisites	None

Course contents

Content	Full- and part-time intramural studies		Part time extramural studies	
	Contact Hours	Indep. work	Contact Hours	Indep. work
Concept of intelligent agents and main characteristics of them	4	6	0	0
Types of agents	4	6	0	0
Agents intelligence (search, planning, knowledge representation and reasoning)	32	48	0	0
Agent development	8	12	0	0
Machine learning (decision trees and neural networks)	12	18	0	0
Multi-agent systems and agent interactions	4	6	0	0
Total:	64	96	0	0

Learning outcomes and assessment

Learning outcomes	Assessment methods
Knows the types of intelligent agents, their characteristics, is capable to choose suitable agents and apply them to solve problems of various domains.	Laboratory work about objects and agents. Corresponding problems in the examination and midterms. Practical classroom works.
Knows the classic artificial intelligence methods, is capable choose suitable methods and apply them to solve problems of various domains.	Laboratory works about search and planning agents. Corresponding problems in the examination and midterms. Practical classroom works.
Knows and is able to apply the machine learning methods, is capable to use them to address various business domain problems.	Laboratory work about decision trees and neural networks. Corresponding problems in the examination and midterms. Practical classroom works.

Evaluation criteria of study results

Criterion	%
Exam	40
Homework	40
Midterms and classroom work	20
Total:	100

Study subject structure

Part	CP	Hours			Tests		
		Lectures	Practical	Lab.	Test	Exam	Work
1.	6.0	32.0	16.0	16.0		*	