

## SYLLABUS

### 1. Data about the program of study

1.1	Institution	The Technical University of Cluj-Napoca
1.2	Faculty	Faculty of Automation and Computer Science
1.3	Department	Computer Science
1.4	Field of study	Computer Science and Information Technology
1.5	Cycle of study	Master of Science
1.6	Program of study/Qualification	Artificial Intelligence and Vision
1.7	Form of education	Full time
1.8	Subject code	1.

### 2. Data about the subject

2.1	Subject name	<i>Intelligent Agent Systems</i>					
2.2	Subject area	Artificial Intelligence and Vision					
2.2	Course responsible/lecturer	Prof. dr. ing. Ioan Alfred Letia – <a href="mailto:letia@cs.utcluj.ro">letia@cs.utcluj.ro</a>					
2.3	Teachers in charge of seminars	Prof. dr. ing. Ioan Alfred Letia – <a href="mailto:letia@cs.utcluj.ro">letia@cs.utcluj.ro</a>					
2.4	Year of study	I	2.5 Semester	1	2.6 Assessment	E–exam, C–colloq., V-verif.	E
2.7	Subject category	Formative category: DA – advanced, DS – speciality, DC – complementary					DS
		Optionality: DI – imposed, DO – optional (alternative), DF – optional (free choice)					DI

### 3. Estimated total time

3.1	Number of hours per week	3	of which	3.2 Course	2	3.3 Seminar	1	3.3 Laborator	-	3.3 Proiect	-
3.4	Total hours in the curriculum	42	of which	3.5 Course	28	3.6 Seminar	14	3.6 Laborator	-	3.6 Proiect	-
3.7 Individual study:											
(a) Manual, lecture material and notes, bibliography										20	
(b) Supplementary study in the library, online and in the field										10	
(c) Preparation for seminars/laboratory works, homework, reports, portfolios, essays										10	
(d) Tutoring										16	
(e) Exams and tests										2	
(f) Other activities											
3.8 Total hours of individual study (summ (3.7(a))...3.7(f))					58						
3.9 Total hours per semester (3.4+3.8)					100						
3.10 Number of credit points					4						

### 4. Pre-requisites (where appropriate)

4.1	Curriculum	Introduction în Artificial Intelligence
4.2	Competence	Competences of the above course

### 5. Requirements (where appropriate)

5.1	For the course	Projector, Computer
5.2	For the applications	Obligation for presence 100% for admission to the final exam

### 6. Specific competences

Professional competences	<p>C4 – Contextual integration and use of dedicated information systems</p> <p><b>C4.1</b> - Establishing of relevant criteria for quality and security in information systems</p> <p><b>C4.2</b> - Usage of multidisciplinary knowledge for the integration of information systems</p> <p><b>C4.3</b> - Usage of new concepts and methods for ensuring security and ease in exploiting the integrated information systems</p> <p><b>C4.4</b> – Generation of tests, usage and adaptation of quality standards and security in dedicated information systems</p> <p><b>C4.5</b> - Realization of interdisciplinary projects for research-development respecting standards of quality, security</p> <p><b>C5</b> - Research development and optimization of information systems combining multidisciplinary knowledge</p> <p><b>C5.1</b> – Demonstration of the knowledge on functional principles in information systems</p> <p><b>C5.2</b> – Usage of capacity to interpret new situations in different domains of science</p> <p><b>C5.3</b> – Creative combination of different principles of research and modern development in interdisciplinary domains, with information components</p> <p><b>C5.4</b> – Usage of criteria and methods for evaluation of qualities for optimizing the information systems in various domains</p> <p><b>C5.5</b> – Finalisation of practical research activities</p>
Cross competences	<b>N/A</b>

**7. Discipline objectives (as results from the *key competences gained*)**

7.1	General objective	Capturing the fundamental notions of intelligent agents, as general logical aspects used in the computer science domain, on the line modeling the knowledge and reasoning.
7.2	Specific objectives	Usage of intelligent agents available in the reasoning and representation of knowledge.

**8. Contents**

8.1. Lecture (syllabus)	Number of hours	Teaching methods	Notes
Introduction	2	Face to face	
Generation of goals based on relevance and trust	2		
Fundamental principals for planning in BDI systems	2		
Summary information for reasoning in hierarchical plans	2		
Dynamic protocols for open agent systems	2		
Operational semantics for goals in adaptive systems	2		
Online Coalitional Skill Formation	2		
Programming multi-agent systems	2		
Framework for monitoring agent-based normative systems	2		
Trusting artificial agents	2		
Commitment-based business patterns	2		
Multi-agent organizations with artifacts	2		
Integrating Learning into a BDI Agent	2		
Explainability in human-agent systems	2		
Bibliography			
Articles from journals oriented on agents available on the web			

8.2. Seminars /Laboratory/Project	Number of hours	Teaching methods	Notes
Software oriented agents	2	Face to face	
Framework for planning and execution in Agentspeak	2		
Instrumenting organizations through artefacts	2		
Debugging systems of BDI agents	2		
Negotiation framework of agents with preferences	2		
Conversational semantics based on commitments	2		
Bibliography Articles from journals oriented on agents available on the web			

**9. Bridging course contents with the expectations of the representatives of the community, professional associations and employers in the field**

Intelligent agents are used increasingly in a society based on knowledge, a priority in the European Union, regarding the software systems

**10. Evaluation**

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Ability to solve specific problems in the domain	Exam face-to-face	75%
10.5 Seminars /Laboratory/Project	Ability to understand problems solved in the domain	Mark on the study of an article	25%
10.6 Minimum standard of performance			
Capacity to model/represent knowledge and reasoning on it at the level of the covered chapters			

Date of filling in:	Title Surname Name	Signature
Lecturer	Prof.dr.ing. Ioan Alfred Letia	
Teachers in charge of application	Prof.dr.ing. Ioan Alfred Letia	

Date of approval in the department 20.02.2024	Head of department Prof.dr.ing. Rodica Potolea
Date of approval in the faculty council 22.02.2024	Dean Prof.dr.ing. Mihaela Dinsoreanu