

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
1.6 Program of study / Qualification	Artificial Intelligence and Vision / Master
1.7 Form of education	Full time

2. Data about the subject

2.1 Subject name	Intelligent Agent Systems			Subject code	1.00
2.2 Course responsible / lecturer	Assoc.prof.dr.eng. Slăvescu Radu-Răzvan - Radu.Razvan.Slavescu@cs.utcluj.ro				
2.3 Teachers in charge of seminars / Laboratory / project	Assoc.prof.dr.eng. Mărginean Anca - Anca.Marginean@cs.utcluj.ro				
2.4 Year of study	I	2.5 Semester	1	2.6 Type of assessment (E - exam, C - colloquium, V – verification)	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:	Course	2	Seminars	1	Laboratory	-	Project	-
3.2 Number of hours per semester	42	of which:	Course	28	Seminars	14	Laboratory	-	Project	-
3.3 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:										-
3.4 Total hours of individual study (suma (3.3(a)...3.3(f)))					58					
3.5 Total hours per semester (3.2+3.4)					100					
3.6 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	Competences of the above course
5.2. For the applications	Obligation for presence 100% for admission to the final exam

6. Specific competence

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

7. Expected Learning Outcomes

Knowledge	The student has knowledge of: • principles of artificial intelligence • business intelligence • operational research • information structure
Skills	The student is able to: • analyse big data • create data sets • assess ICT knowledge • use an application-specific interface
Responsibilities and autonomy	The student has the ability to work independently in order to: • develop an analytical approach • take a proactive approach • develop strategies to solve problems • be open minded

8. Discipline objective (as results from the key competences gained)

8.1 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.
8.2 Specific objectives	Usage of intelligent agents available in the reasoning and representation of knowledge.

9. Contents

9.1 Lectures		Hours	Teaching methods	Notes
Introduction		2		
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		
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				
9.2 Applications - Seminars/Laboratory/Project		Hours	Teaching methods	Notes
Software oriented agents		2		
Framework for planning and execution in Agentspeak		2		
Instrumenting organizations trough 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				

**Se vor preciza, după caz: tematica seminariilor, lucrările de laborator, tematica și etapele proiectului.*

10. 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.

11. Evaluation

Activity type	Assessment criteria	Assessment methods	Weight in the final grade
Course	Ability to solve specific problems in the domain	Exam	75%
Seminar	Ability to understand problems solved in the domain	Mark on the study of an article	25%
Laboratory	-	-	-

Project	-	-	-
Minimum standard of performance: Capacity to model/represent knowledge and reasoning on it at the level of the covered chapters			

Date of filling in: 01.09.2025	Responsible	Title First name Last name	Signature
	Course	Assoc.prof.dr.eng. Radu-Răzvan SLĂVESCU	
	Applications	Assoc.prof.dr.eng. Anca MĂRGINEAN	

Date of approval in the department 17.09.2025	Head of department, Prof.dr.eng. Rodica Potolea
Date of approval in the Faculty Council 19.09.2025	Dean, Prof.dr.eng. Vlad Mureșan