

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

2. Data about the subject

2.1 Subject name	Intelligent Agent Systems			Subject code	1
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. Slăvescu Radu-Răzvan - Radu.Razvan.Slavescu@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: DF – fundamental, DS – speciality, DC – complementary				DS
	Optionality: DOB – mandatory, DOP – optional (alternative), DFA – optional (free choice)				DOB

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	• analyse business requirements • analyse big data • apply ICT systems theory • create data sets • define technical requirements • design process • develop creative ideas • develop statistical software • deliver visual presentation of data • creatively use digital technologies • use data processing techniques • acquire system component • align software with system architectures • create data models • manage system testing • assess ICT knowledge • manage database • implement ICT security policies • integrate system components • design enterprise architecture • design information system • use an application-specific interface • use markup languages • build predictive models • build recommender systems • utilise machine learning • conduct scholarly research • develop computer vision system • apply statistical analysis techniques • manage data collection systems
6.2 Cross competences	The graduate: • develop an analytical approach • taking a proactive approach • developing strategies to solve problems • being open minded • coordinate engineering teams

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
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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

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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: 29.04.2026	Responsible	Title First name Last name	Signature
	Course	Assoc.prof.dr.eng. Radu-Răzvan SLĂVESCU	
	Applications	Assoc.prof.dr.eng. Radu-Răzvan SLĂVESCU	

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