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	Data Science / Master
1.7 Form of education	Full time

2. Data about the subject

2.1 Subject name	***Research Activity 1***			Subject code	**6.00**
2.2 Course responsible / lecturer	Not necessary.				
2.3 Teachers in charge of seminars / Laboratory / project	Not necessary.				
2.4 Year of study	I	2.5 Semester	1	2.6 Type of assessment (E - exam, C - colloquium, V – verification)	C
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	14	of which:	Course	-	Seminars	-	Laboratory	-	Project	14
3.2 Number of hours per semester	196	of which:	Course	-	Seminars	-	Laboratory	--	Project	196
3.3 Individual study:										
(a) Manual, lecture material and notes, bibliography										-
(b) Supplementary study in the library, online and in the field										25
(c) Preparation for seminars/laboratory works, homework, reports, portfolios, essays										25
(d) Tutoring										-
(e) Exams and tests										4
(f) Other activities:										-

3.4 Total hours of individual study (suma (3.3(a)…3.3(f)))	54
3.5 Total hours per semester (3.2+3.4)	250
3.6 Number of credit points	10

4. Pre-requisites (where appropriate)

4.1 Curriculum	It's not necessary
4.2 Competence	It's not necessary

5. Requirements (where appropriate)

5.1. For the course	It's not necessary
5.2. For the applications	Computers, equipment and specific software

6. Specific competence

6.1 Professional competences	**C2** - Development of advanced techniques, methods and methodologies in the field of artificial intelligence and vision systems • **C2.1** - Identification and description of the structure and mode of operation of complex systems of intelligence and artificial vision • **C2.2** - Exploitation of specialized knowledge in order to identify and understand the methodologies and techniques for making hardware and software components • **C2.3** - Building original software components of advanced artificial intelligence and artificial vision systems, using algorithms, techniques, design methods, methodologies, protocols, programming languages, data structures, technologies and complex programming environments, reported in the literature Specialized • **C2.4** - The use of methods, criteria and metrics for the evaluation and selection of methodologies for the realization of artificial intelligence and vision systems, of their functional and non-functional characteristics • **C2.5** - The development of original artificial intelligence and vision projects, their implementation, testing and validation based on the innovative combination of those reported in the specialized literature.
6.2 Cross competences	N/A

7. Expected Learning Outcomes

Knowledge	The student has knowledge of: • cloud technologies • computer science • data warehouse • statistics • blockchain application security principles • blockchain architecture • blockchain-based business models
Skills	The student is able to: • manage data • manage research data • process data • store digital data and systems
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	Learning research and design skills and competencies in the field of intelligence and artificial vision, computers and information technology
8.2 Specific objectives	Assimilation of knowledge and skills regarding: - choosing a research topic - identifying and studying the related bibliography - elaboration of the specifications - working methodology development

9. Contents

9.1 Lectures	Hours	Teaching methods	Notes
Not necessary			
Bibliography: Not necessary			
9.2 Applications - Seminars/Laboratory/Project	Hours	Teaching methods	Notes
Establishing the theme of the dissertation project;		Adviser - student dialog	
Establishing the main chapters;			
Documentation on the dissertation topic;			
Creating a synthesis regarding the bibliographic documentation			
Bibliography: Establishd by each advisor in accordance with the research topics			

**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

It is carried out through periodic meetings with representatives of the economic environment.

11. Evaluation

Activity type	Assessment criteria	Assessment methods	Weight in the final grade
Course	Not necessary		
Seminar			
Laboratory			
Project	Based on the practical results and the elaborated report	Oral examination, Report evaluation	60% 40%
Minimum standard of performance: Average 5			

Date of filling in: 01.09.2025	**Responsible**	**Title First name Last name**	**Signature**
	Course	-	
	Applications	-	

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