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	***Research Activity 1***			Subject code	**6**
2.2 Course responsible / lecturer	-				
2.3 Teachers in charge of seminars / Laboratory / project	Dissertation Thesis Advisor				
2.4 Year of study	I	2.5 Semester	1	2.6 Type of assessment (E - exam, C - colloquium, V – verification)	V
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	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	• 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: • artificial neural networks • computer programming (Python) • computer simulation • digital data processing • principles of artificial intelligence • visual presentation techniques • machine learning (computer programming) • computer vision • lean project management • digital systems • image recognition • information structure • lean project management

Skills	The student is able to: • create data sets • define technical requirements • design processes • develop statistical software • use data processing techniques • build recommender systems • identify processes for re-engineering • manage ICT data classification • align software with system architectures • analyse business requirements • manage databases • 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 • coordinate engineering teams

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
-			
Bibliography. Not necessary			
9.2 Applications - Seminars/Laboratory/Project	Hours	Teaching methods	Notes
Establishing the theme of the dissertation project;			
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	-	-	-
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: 29.04.2026	**Responsible**	**Title First name Last name**	**Signature**
	Course	-	
	Applications	Dissertation Thesis Advisor	

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