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	5

2. Data about the subject

2.1	Subject name			***Project 1 IVA***			
2.2	Subject area			Artificial Intelligence			
2.2	Course responsible/lecturer						
2.3	Lecturers/ Teachers in charge with seminars/ labs./ projects			Prof. dr. eng. Sergiu Nedevschi, Sergiu.Nedevschi@cs.utcluj.ro Prof. dr. eng. Dorian Gorgan- Dorian.Gorgan@cs.utcluj.ro Prof.dr.eng. Rodica Potolea- Rodica.Potolea@cs.utcluj.ro Prof.dr. eng. Vasile Dadarlat- Vasile.Dadarlat@cs.utcluj.ro Prof.dr. eng. Gheorghe Sebestyen-Gheorghe.Sebestyen@cs.utcluj.ro Prof.dr.ing. Eneia Todoran- Eneia.Todoran@cs.utcluj.ro Prof.dr.ing. Mihaela Dinsoreanu- Mihaela.Dinsoreanu@cs.utcluj.ro			
2.4 Year of study	1	2.5 Semester	1	2.6 Assessment	E–**e**xam, C–**c**olloq., V-**v**erif.		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	2	of which	3.2 Course	-	3.3 Seminar		3.3 Laborator	-	3.3 Proiect	2
3.4 Total hours in the curriculum	28	of which	3.5 Course	-	3.6 Seminar		3.6 Laborator	-	3.6 Proiect	28

3.7 Individual study:	
(a) Manual, lecture material and notes, bibliography	20
(b) Supplementary study in the library, online and in the field	20
(c) Preparation for seminars/laboratory works, homework, reports, portfolios, essays	20
(d) Tutoring	10
(e) Exams and tests	2
(f) Other activities	-

3.8 Total hours of individual study (summ (3.7(a)...3.7(f)))	72
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	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 competences

6.1 Professional competences	C3 - Specification, analysis, modeling, design, verification, testing, validation, and maintenance of advanced artificial intelligence and vision systems and their components, using field-specific tools • C3.1 - Demonstrating knowledge of the domain, programming environments, and concepts of artificial intelligence and vision systems • C3.2 – Analysis of the interactions and the mode of operation of the components of complex artificial vision systems proposed in the scientific literature • C3.3 - Analysis, modeling and innovative design of artificial intelligence and vision systems, of related hardware and software components • C3.4 - Comparative, synthetic, including experimental evaluation of solution alternatives for performance optimization, based on usability criteria • C3.5 - Developing and implementing original solutions for domain-specific problems, starting from a set of informally specified requirements
6.2 Cross competences	NA

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

7.1	General objective	The development of skills and abilities for the development of projects in the field of intelligence and artificial vision, computers and information technology
7.2	Specific objectives	Assimilation of knowledge and skills regarding: • carrying out a bibliographic study related to a research topic • elaboration of project objectives • elaboration of the definition specifications for the chosen project • conducting experiments and preliminary tests • development of a general scheme of the project

8. Contents

8.1. Lecture (syllabus)	Number of hours	Teaching methods	Notes
Not necessary			
Bibliography Not necessary			
8.2. **Applications (**Seminars /Laboratory/Project)	Number of hours	Teaching methods	Notes
Introduction	2	Individual study, Presentation of design methodologies, Checks	
Bibliographic study: - Identification of resources/documentation	2		
Bibliographic study: - Documentation analysis	2		
Bibliographic study: - Documentation synthesis			
Elaboration and presentation of study conclusions (document)	2		
Specifying the requirements: - Defining the scope (dimension) of the project	2		
Specification of requirements: - Definition of core requirements	2		
Specification of requirements: - Structure and representation of requirements	2		
Elaboration and presentation of specifications (document)	2		

Requirements Analysis: Analysis of functional requirements - use-cases	2		
Requirements Analysis: Analysis of non-functional - tactical requirements	2		
Requirements analysis: Establishing the requirements in detail	2		
Elaboration and presentation of the analysis (document)	2		
Elaboration and presentation of the final documentation	2		

Bibliography
[1] S.J. Russell, P. Norvig – Artificial Intelligence: A Modern Approach, Prentice Hall, 2009
[2] D. Forsyth, J. Ponce „Computer Vision A Modern Approach", Prentice Hall, USA, 2002
[3] G.C. Burdea, P. Coiffet – Virtual Reality Technology (2nd edition), J. Wiley & Sons, 2003.
[4] C. Manning and H. Schultze – Foundations of Statistical Natural Language Processing, MIT Press. Cambridge, MA: May 1999.
[5] R.S. Pressman – Software Engineering, A Practitioner's Approach, McGraw-Hill, 7/e, 2009
[6] Convolutional Neural Networks for Visual Recognition, http://cs231n.stanford.edu/

9. 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

10. Evaluation

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Not necessary		
10.5 Applications (Seminars /Laboratory /**Project)**	Based on the practical results and the elaborated report	Oral examination, Report evaluation	60% 40%
10.6 Minimum standard of performance: Average 5			

Date of filling in:		**Title Surname Name**	**Signature**
	Lecturer		
	Teachers in charge of application	Prof. dr. eng. Sergiu Nedevschi	
		Prof. dr. eng. Dorian Gorgan	
		Prof. dr. eng. Rodica Potolea	
		Prof. dr. eng. Vasile Dadarlat	
		Prof. dr. eng. Gheorghe Sebestyen	
		Prof. dr. eng. Eneia Todoran	
		Prof. dr. eng. Mihaela Dinsoreanu	

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