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	11

2. Data about the subject

2.1	Subject name			***Project 2 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	2	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	**Project 1 IVA**
4.2	Competence	Related to the discipline above

5. Requirements (where appropriate)

5.1	For the course	It's not necessary
5.2	For the seminar / laboratory /	Computers, equipment and specific software

	project	

6. Specific competences

6.1 Professional competences	C4 - Contextual integration and integrity of complex artificial intelligence and vision systems • C4.1 - Demonstration of knowledge and understanding of interoperability and integration elements specific to artificial intelligence and vision systems, taken both as a whole and on modules • C4.2 - Using interdisciplinary knowledge to adapt complex intelligence and artificial vision systems in relation to the dynamic requirements of the application field • C4.3 - The combined use of classic and original principles and methods for the integration of the components of artificial intelligence and vision systems • C4.4 - The use of quality, safety and security standards in information processing and in the integration of complex intelligence and artificial vision systems • C4.5 - Realization of interdisciplinary projects, including problem identification and analysis, elaboration of specifications, software design, implementation of functional testing and evaluation of specific quality, security and performance criteria, as well as validation of the integrated artificial intelligence and vision system
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: • developing the architecture of a software engineering application • designing the basic components of the application • elaboration of the design documentation

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	Presentation of design methodologies, Periodic checks	
Elaboration of the architecture: - Identification of the main components	2		
Elaboration of the architecture: - Identification and establishment of interfaces	2		
Architecture development: - Identification and establishment of dynamic aspects	2		
Presentation of the developed architecture (document)	2		
Design: - Detailing of architectural components (1)	2		
Design: - Detailing of architectural components (2)	2		

Design: - Detailing of architectural components (3)	2		
Design: - Detailing of architectural components (4)	2		
Design: - Detailing of architectural components (5)	2		
Design: - Detailing of architectural components (6)	2		
Design: - Detailing of architectural components (7)I	2		
Presentation of the project (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