Aprobat
Ședința Senatului
din data 13.02.2026

ȘTEFAN CEL MARE UNIVERSITY OF SUCEAVA
FACULTY OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE
Domain: **Computers and Information Technology**
Program of study: **ARTIFICIAL INTELLIGENCE & SOCIAL ROBOTICS APPLIED TO GLOBAL HEALTH**
Cycle of study: **Master of Research**
Form of study: **Full time**
Duration of studies: **2 years**
Applicable from Year I, Academic Year 2026-2027

CURRICULUM

Requirements for Obtaining the Master's Degree
120 credits from mandatory courses

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YEAR 1

No.	Compulsory courses	Course code USV.FIESC. AISR	Sem. 1							Sem. 2						
			C	S	L	P	I*	Form of evaluation	ECTS	C	S	L	P	I*	Form of evaluation	ECTS
1	Mathematics for Artificial Intelligence	DS.01.01	1		1		97	E	5							
2	Advanced Machine Learning	DF.01.02	2		1		108	E	6							
3	Advanced Software Engineering	DF.01.03	2		1		108	V	6							
4	Data Warehouse and Data Mining	DF.01.04	2		1		108	E	6							
5	Computer Science Perspectives in Global Health	DS.01.05	1			1	72	E	4							
6	Ethics and Academic Integrity	DC.01.06	0.5	0.5			61	V	3							
7	Natural Human-Computer Interaction	DS.02.07								2		1		108	V	6
8	Ambient Intelligence and Augmented Reality	DS.02.08								2		1		108	E	6
9	Numerical Signal Processing Systems	DS.02.09								1		1	1	108	E	6
10	Cloud Computing for AI Applications	DS.02.10								2		1		108	E	6
11	Assistive Software Technologies	DS.02.11								1		1		122	V	6
	Total compulsory hours per week		**8.5**	**0.5**	**4**	**1**	**554**	**4E 2V**	**30**	**8**		**5**	**1**	**554**	**3E 2V**	**30**
			14							**14**						

I* - Total hours needed for independent study and assessment of student learning (calculated for the full semester).

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YEAR 2

No.	Compulsory courses	Course code USV.FIESC. AISR	Sem. 3							Sem. 4						
			C	S	L	P	I*	Form of evaluation	ECTS	C	S	L	P	I*	Form of evaluation	ECTS
1	Mobile and Humanoid Robots	DS.03.01	2		1	1	69	E	5							
2	Probabilistic and Metaheuristic Methods for Artificial Intelligence	DS.03.02	2		1		83	E	5							
3	Intelligent Sensors for Robotics and Digital Health	DS.03.03	1		1		97	E	5							
4	Interactions with Social Robots	DS.03.04	1		1		97	E	5							
5	Project Work in Artificial Intelligence and Social Robotics Applied to Global Health	DS.03.05				1	111	V	5							
6	Scientific Creativity, Technical Communication and Innovation for Biomedical Applications	DC.03.06	1		1		97	V	5							
7	Dissertation Research	DS.04.07											6	216	V	12
8	Dissertation Preparation	DS.04.08											8	338	V	18
	Total compulsory hours per week		7		5	2	554	4E 2V	30				14	554	2V	30
			14							14						

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Academic year structure	Number of weeks		Number of physical hours per week*	
Year of study	Sem. I	Sem. II	Sem. I	Sem. II
I	14	14	14	14
II	14	14	14	14

*Compulsory + optional courses

SUMMARY

No.	Course type	Total hours	%
1	COMPULSORY COURSES	784	100.00
	Total hours study program	**784**	**100.00**

No.	Course type	Total hours	%	Number of lecture hours	Number of application hours
1	FUNDAMENTAL COURSES	126	16.07	84	42
2	SPECIALIZATION COURSES	616	78.57	224	392
3	COMPLEMENTARY COURSES	42	5.36	21	21
	TOTAL	**784**	**100.00**	**329**	**455**

Number of application hours / number of lecture hours	1.38
Number of hours individual study / Number of university study hours	2.83

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No.	Evaluation type	Number of evaluations		Total	
		Year I	Year II	No.	%
1	Exam	7	4	11	**57.89**
2	Ongoing assessment	4	4	8	**42.11**
	TOTAL	**11**	**8**	**19**	**100.00**

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COMPETENCES

Professional competences

CP1 perform scientific research
CP2 develop product design
CP3 design prototypes
CP4 develop data processing applications
CP5 apply statistical analysis techniques
CP6 analyze big data
CP7 manage research data
CP8 establish data processes
CP9 prepare scientific reports
CP10 conduct research across disciplines
CP11 apply research ethics and scientific integrity principles in research activities
CP12 perform project management

Transversal competences

CT1 work in teams
CT2 assume responsibility

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COMPETENCY GRID

No.	Course	Competences														ECTS
		CP1	CP2	CP3	CP4	CP5	CP6	CP7	CP8	CP9	CP10	CP11	CP12	CT1	CT2	
		perform scientific research	develop product design	design prototypes	develop data processing applications	apply statistical analysis techniques	analyze big data	manage research data	establish data processes	prepare scientific reports	conduct research across disciplines	apply research ethics and scientific integrity principles in research activities	perform project management	work in teams	assume responsibility	
Year I																
1	Mathematics for Artificial Intelligence				1	3	1									5
2	Advanced Machine Learning		1		1	2	1							1		6
3	Advanced Software Engineering		1	1	2								1	1		6
4	Data Wareouse and Data Mining				1	1	2	1	1							6
5	Computer Science Perspectives in Global Health							1		1	1	1				4
6	Ethics and Academic Integrity											2			1	3
7	Natural Human-Computer Interaction	1	1	1						1	2					6
8	Ambient Intelligence and Augmented Reality	1	1	1						1	2					6
9	Numerical Signal Processing Systems	1	1	1					1				1	1		6
10	Cloud Computing for AI Applications	1	1	1	1								1	1		6

11	Assistive Software Technologies	1		2				1		2						6
Year II																
12	Mobile and Humanoid Robots	1	1	1	1									1		5
13	Probabilistic and Metaheuristic Methods for Artificial Intelligence	1	1		3											5
14	Intelligent Sensors for Robotics and Digital Health	1		1	1				1					1		5
15	Interactions with Social	1	1	2	1											5
16	Project Work in Artificial Intelligence and Social Robotics Applied to Global Health	1	1	1	1				1							5
17	Scientific Creativity, Technical Communication and Innovation for Biomedical Applications	1									2		1		1	5
18	Dissertation Research	6						3				1	1		1	12
19	Dissertation Preparation	3								8		2	2		3	18
		20	**10**	**12**	**13**	**6**	**4**	**6**	**4**	**13**	**7**	**6**	**7**	**6**	**6**	**120**

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LEARNING OUTCOMES GRID

No.	Knowledge	Skills	Responsibility and autonomy	Courses contributing to achieving learning outcomes
1	The student/graduate identifies, critically evaluates, and applies specialized concepts and methods from the field of artificial intelligence and advanced data analytics as a foundation for original thinking and/or research.	The student/graduate applies advanced supervised and unsupervised machine learning methods, efficient feature selection techniques, and pattern extraction from relational, non-relational, and multimodal data to solve complex problems. The student/graduate evaluates the technical performance of trained models and of exploration and optimization algorithms in high-dimensional search spaces. The student/graduate integrates specialized knowledge of mathematics (matrix, differential, and multivariable calculus) and statistics (hypothesis testing and inferential statistical techniques) with artificial intelligence concepts to effectively address research problems.	The student/graduate autonomously manages design and development activities by applying artificial intelligence techniques and assumes responsibility for the validity of the mathematical, statistical, and scientific foundations.	• Mathematics for Artificial Intelligence • Advanced Machine Learning • Data Wareouse and Data Mining • Probabilistic and Metaheuristic Methods for Artificial Intelligence
2	The student/graduate identifies, critically evaluates, and applies specialized concepts and methods from software engineering, cloud technologies, and numerical signal processing as a foundation for original research.	The student/graduate designs and develops complex software solutions by applying advanced software engineering paradigms, including a focus on leveraging generative artificial intelligence technologies. The student/graduate applies numerical methods and advanced signal processing algorithms for the efficient acquisition, processing, analysis, and interpretation of data in intelligent systems using specialized platforms. The student/graduate designs software architectures and manages complex software projects by integrating cloud technologies for artificial intelligence applications with high-performance requirements.	The student/graduate manages software development processes within a team across various contexts and platforms, taking responsibility for architectural and implementation decisions.	• Advanced Software Engineering • Numerical Signal Processing Systems • Cloud Computing for AI Applications

3	The student/graduate identifies and applies cutting-edge specialized concepts and methods in the field of human-computer interaction as a foundation for original thinking and/or research, and critically reflects on knowledge at the intersection with artificial intelligence through human-centered design of intelligent technologies.	The student/graduate designs and implements natural interfaces and complex interactive experiences, based on user motion and gesture acquisition and recognition, for intelligent systems in physical, virtual, and augmented reality environments. The student/graduate designs and evaluates interactive command vocabularies using a user-centered methodology and implements recognition techniques by integrating supervised learning. The student/graduate integrates advanced artificial intelligence methods into interactive applications that adapt to users, taking into account the diversity of their individual preferences and abilities. The student/graduate designs interactive solutions based on natural interfaces for social robots by integrating advanced signal analysis for multimodal perception and context-adapted social interaction models.	The student/graduate takes responsibility for the design, implementation, and evaluation of human-centered interactive solutions, managing complex design situations involving different user, device, and environment characteristics.	• Natural Human-Computer Interaction • Ambient Intelligence and Augmented Reality • Assistive Software Technologies • Interactions with Social Robots
4	The student/graduate identifies and applies advanced cutting-edge concepts and methods in the field of robotics as a foundation for original thinking and/or research, and critically reflects on knowledge at the intersection with artificial intelligence.	The student/graduate designs and implements advanced robotic systems using intelligent sensors and specialized control algorithms. The student/graduate integrates artificial intelligence techniques into robotic systems and evaluates their behavior and performance in complex applications. The student/graduate adapts the behavior of robotic systems for autonomous or semi-autonomous operation by performing advanced analysis of sensor-acquired data and adjusting control strategies using supervised learning techniques.	The student/graduate manages research and development activities involving robotic systems within a team, taking responsibility for the social impact of the proposed solutions.	• Mobile and Humanoid Robots • Intelligent Sensors for Robotics and Digital Health • Project Work in Artificial Intelligence and Social Robotics Applied to Global Health
5	The student/graduate analyzes the methodological framework of research in computing and information technology for developing innovative solutions, ensuring scientific rigor and adherence to ethical research standards, and critically reflects on knowledge at the intersection with global health.	The student/graduate analyzes and applies advanced scientific research methodologies from computing and information technology to develop original solutions in interdisciplinary contexts, with applications addressing key challenges in global health. The student/graduate integrates ethical principles and academic integrity into all stages of the research and development process. The student/graduate effectively communicates the results of scientific research through technical reports, presentations, and/or scientific papers, structuring information for the target audience, highlighting original contributions, and critically interpreting the results in the context of the scientific literature.	The student/graduate independently conducts research and scientific communication at the intersection of artificial intelligence, robotics, and global health, taking responsibility for the application of quality and ethical standards.	• Computer Science Perspectives in Global Health • Ethics and Academic Integrity • Scientific Creativity, Technical Communication and Innovation for Biomedical Applications • Dissertation Research • Dissertation Preparation

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