ANEXA 1

CURRICULUM
Valid for the study cycle 2025-2027
"Aurel Vlaicu" University of Arad

Faculty of Exact Sciences
Department **Mathematics and Computer Science**
Name of program **Advanced Studies in Applied Computer Science** (English)
Field of studies **Informatics**
Type of program **Professional**
Length of program / number of ECTS credits **2 years /120 credits**
Type of education **With attendance**
Graduate title earned **Master in informatics**

1. MISSION STATEMENT

The mission of the Master of Science (MSc) program in "Advanced Studies in Applied Computer Science (English)" is to provide academic, research and public service leadership in a field perfectly aligned with the Faculty of Exact Sciences. The aims of this program are to:

- foster research-oriented critical thinking in Informatics and related applications;
- enhancing the educational offer by developing and nurturing a professional environment conducive to scholarship in the pursuit of knowledge; and
- open the European and international dimensions by building communication skills to excel in the profession.

2. OBJECTIVES

- Constantly improving skills and expanding knowledge to analyze socio-economical facts and phenomena for discovering solutions andproposing alternatives;
- Applying the acquired knowledge in scientific/professional projects with the aim of finding solutions to the challenges raised by the Romanian as well as European economy
- Developing the skills to find and use methods, procedures and scientific instruments, as well as fostering theability to propose and convey scientific explanations for socio-economical processes and phenomena
- Nurturing English professional communication proficiency, effectiveintegration within multinational/international research teams.

3. COMPETENCES AND EXPECTED LEARNING OUTCOMES DEVELOPED WITHIN THE STUDY PROGRAM)

Professional Competences

C1. Create the process diagram
C2. Analyze software specifications
C3. Create software
C4. It uses application-specific interfaces
C5. Develop the prototype for the software
C6. Translates requirements into a visual model
C7. Create data models
C8. Interprets technical texts
C9. Design cloud databases
C10. Manage cloud data and its storage
C11. It uses software libraries
C12. Design the user interface
C13. Carry out scientific research
C14. Uses computer-aided software engineering tools
C15. Performs risk analysis
C16. Perform data analysis
C17. Identify statistical models

Transversal Competences

CT1. Think analytically
CT2. Approach challenges positively
CT3. He is attentive to details
CT4. It works efficiently
CT5. Work in teams

Nr. crt.	LEARNING OUTCOMES			Subjects Contributing to the Achievement of Learning Outcomes
	Knowledge	**Skills**	**Responsibility and Autonomy**	
C1. Create the process diagram				
	The graduate: a) explains advanced concepts related to process modeling b) identifies the stages of an IT process c) explains data flow models d) formulates logical structures for implementation	The graduate: a) carries out the analysis steps of an IT process b) analyzes information from a given system c) performs searches and simulations in specific digital environments	The graduate: a) consistently applies work standards in process design b) coordinates multidisciplinary teams in the process of analyzing and modeling processes c) justifies methodological choices, taking responsibility for decisions	• Programming Languages for Databases • Programming on mobile platforms • Project in Data Science • Specialized practice • Elaboration of the dissertation thesis
C2. Analyze software specifications				
	The graduate: a) knows the concepts, methods, and standards for defining, analyzing, and documenting software requirements b) understands the types of requirements: functional, non-functional, system, and user c) masters modern techniques for requirements modeling d) understands the impact of requirements on architectural design, software development, and testing e) understands the concepts of Continuous Integration (CI) and Continuous Delivery (CD) in the context of software architectures	The graduate: a) designs and implements functional software applications b) tests the developed applications c) develops and applies methods for requirements validation and verification d) uses advanced modeling tools e) applies best practices in development	The graduate: a) meets project deadlines and requirements b) demonstrates initiative and perseverance in completing software products c) applies professional standards in the development process d) prepares professional-quality documentation regarding software requirements	• Project in Data Science • Project in advanced encryption and information security techniques • Project in artificial intelligence • E-business Specialized practice • Elaboration of the dissertation thesis
C3. Create software				
	The graduate: a) explains the software development life cycle b) knows programming languages and paradigms c) identifies types of applications and their purposes	The graduate: a) designs and implements functional software applications b) tests and validates the developed applications c) applies best practices in development	The graduate: a) meets project deadlines and requirements b) demonstrates initiative and perseverance in completing software products c) applies professional standards in the development process	• Programming Languages for Databases • Programming on mobile platforms • Project in Data Science • Project in advanced encryption and information security techniques • Project in artificial intelligence

				• E-business • Specialized practice Elaboration of the dissertation thesis
C4. It uses application-specific interfaces				
	The graduate: a) describes the types of graphical user interfaces and command-line interfaces b) understands the principles of UX/UI c) knows the specific features of software applications	The graduate: a) interacts effectively with application interfaces b) uses menus, forms, and specific commands c) adapts working methods according to the application used	The graduate: a) efficiently organizes their work using software interfaces b) monitors the optimization of the workflow c) adheres to best usage practices	• Programming Languages for Databases • Programming on mobile platforms • Project in Data Science • Project in advanced encryption and information security techniques • Project in artificial intelligence • E-business • Specialized practice
C5. Develop the prototype for the software				
	The graduate: a) knows prototyping methods (low/high fidelity) b) understands the purpose of prototypes in requirements validation c) is familiar with prototyping tools and languages	The graduate: a) creates functional or graphical prototypes b) integrates feedback to improve prototypes c) tests prototypes with users	The graduate: a) meets project deadlines and specifications b) collaborates with the team in the early phases of development c) proposes innovative solutions for prototypes	• Programming Languages for Databases • Programming on mobile platforms • Project in Data Science • Project in advanced encryption and information security techniques • Project in artificial intelligence • E-business • Specialized practice
C6. Translates requirements into a visual model				
	The graduate: a) explains the concepts of visual modeling (UML, ERD) b) recognizes the relationships between entities and software components c) understands modeling standards	The graduate: a) uses diagrams to represent systems b) documents visual models for analysis and development c) communicates effectively with the team through graphical models	The graduate: a) ensures the accuracy of the produced models b) actively contributes to the requirements analysis phase c) uses recognized notation standards	• Programming on mobile platforms • Advanced encryption and information security techniques • Elaboration of the dissertation thesis
C7. Create data models				
	The graduate: a) describes modeling concepts (relational, object-oriented, etc.) b) knows types of relationships between entities c) understands database normalization	The graduate: a) designs conceptual and logical data models b) uses ER diagrams c) optimizes data structure	The graduate: a) maintains data consistency and integrity b) adapts models to application requirements c) applies best practices in data design	• Programming Languages for Databases • Advanced Topics in Data Analysis • Data Science • Project in Data Science • Introduction to Machine Learning • Project in artificial intelligence
C8. Interprets technical texts				

	The graduate: a) has knowledge of collecting, analyzing, and interpreting scientific data b) knows methods for collecting, classifying, and evaluating technical information from various sources c) critically summarizes new and complex information related to a given topic	The graduate: a) correctly interprets information gathered on a given topic b) selects necessary information to solve a specific problem c) uses technologies for selecting and filtering scientific data d) utilizes digital tools to support information synthesis	The graduate: a) selects data processing methods that adhere to scientific rigor b) coherently utilizes the information available c) ensures the use of data in accordance with ethical standards d) interprets and presents results in a coherent and rigorous manner	• Advanced Topics in Data Analysis • Mathematical Optimization • Computational Mathematics • Neural Networks • Introduction to Machine Learning • Programming Languages for Databases • Dynamic Systems and Optimal Control • Advanced encryption and information security techniques • Data Science • Research Methods • Quantum Fundamentals of Computer Science • Neural Computations • Validated Computing • Stochastic Systems • E-business • Programming on mobile platforms • Fuzzy Logic and Quantum Logic • Applied Statistics in Technical and Natural Sciences • Project in Data Science • Project in advanced encryption and information security techniques • Project in artificial intelligence • Elaboration of the dissertation thesis • Specialized practice
C9. Design cloud databases				
	The graduate: a) understands relational and non-relational data models (SQL vs. NoSQL) b) knows cloud database architectures (AWS RDS, Azure SQL, Google Cloud) c) masters principles of data security in cloud environments (encryption, backup, access) d) understands	The graduate: a) creates, modifies, and maintains databases optimized for performance and specific requirements b) implements databases in cloud environments using AWS, Azure, and GCP c) optimizes queries and data structures d) specifies, configures, and applies policies for backup, replication,	The graduate: a) analyzes application requirements and selects the optimal solution b) ensures the confidentiality, integrity, and availability of data c) applies backup and recovery policies d) monitors performance and adjusts resources or	• Advanced Topics in Data Analysis • Data Science • Project in Data Science • Advanced encryption and information security techniques • Project in advanced encryption and information security techniques • Specialized practice • Applied Statistics in Technical and Natural

	concepts of optimization and scalability in distributed infrastructures (backup, replication, transactions)	restoration, and security	configurations for efficient scaling	Sciences • Elaboration of the dissertation thesis
C10. Manage cloud data and its storage				
	The graduate: a) understands the operating principles of cloud computing services (IaaS, PaaS, SaaS) b) knows cloud storage architectures (object, block, file) c) is familiar with security and encryption protocols for protecting data in the cloud d) masters cloud tools and platforms (AWS, Microsoft Azure, Google Cloud)	The graduate: a) configures and manages cloud storage space b) implements data backup and recovery policies c) monitors performance and resource utilization d) uses CLI/GUI/API interfaces for managing cloud data	The graduate: a) ensures the availability and integrity of data stored in the cloud b) implements and maintains security measures for data protection c) optimizes costs associated with cloud storage d) documents procedures and access rights management	• Advanced Topics in Data Analysis • Data Science • Project in Data Science • Advanced encryption and information security techniques • Project in advanced encryption and information security techniques • Specialized practice • Applied Statistics in Technical and Natural Sciences • Elaboration of the dissertation thesis
C11. It uses software libraries				
	The graduate: a) explains the structure and functionality of software libraries b) is familiar with popular libraries (standard and external) c) understands mechanisms for importing and managing dependencies	The graduate: a) integrates libraries into software projects b) efficiently utilizes predefined functions c) documents their usage in the code	The graduate: a) responsibly selects libraries suitable for the project b) complies with licenses and usage conditions c) contributes to code reuse and maintenance	• Advanced encryption and information security techniques • Project in advanced encryption and information security techniques • Mathematical Optimization • Computational Mathematics • Validated Computing • Dynamic Systems and Optimal Control • Stochastic Systems • Applied Statistics in Technical and Natural Sciences • Introduction to Machine Learning • Project in artificial intelligence • Neural Networks • Neural Computations • E-business
C12. Design the user interface				
	The graduate: a) knows UX/UI design principles b) explains color theory, spacing, and	The graduate: a) creates interface mockups and prototypes b) optimizes the user	The graduate: a) takes responsibility for the interface's impact on the user b) collaborates	• Project in Data Science • Project in advanced encryption and information security techniques

	visual hierarchy c) understands user behavior	experience c) applies usability testing	effectively with designers and developers c) adheres to accessibility standards	• Project in artificial intelligence • Quantum Fundamentals of Computer Science • Fuzzy Logic and Quantum Logic • E-business • Elaboration of the dissertation thesis • Specialized practice
C13. Carry out scientific research				
	The graduate: a) knows the scientific research methodology (stages, types of research, validation) b) understands data collection and analysis techniques (statistical, qualitative, and quantitative) c) knows and applies ethical standards in research and domain-specific legislation d) masters the structure and requirements for writing a scientific article/publication	The graduate: a) formulates hypotheses and defines objectives b) applies data collection and analysis methods c) uses computer tools for analysis d) writes papers and supports/presents them	The graduate: a) plans and organizes research activities b) adheres to ethical and deontological standards c) publishes or presents results d) ensures the quality and originality of the research	All courses, but especially: • Project in Data Science • Project in advanced encryption and information security techniques • Project in artificial intelligence • Elaboration of the dissertation thesis • Specialized practice
C14. Uses computer-aided software engineering tools				
	The graduate: a) identifies categories of CASE tools b) describes functionalities such as modeling, code generation, automated testing c) understands the advantages of automating the development process	The graduate: a) uses tools for UML modeling, testing, or integration b) manages versions and source code c) integrates tools into the development lifecycle	The graduate: a) adheres to workflows and project configuration b) optimizes processes using tools c) contributes to the quality of the software product	• Mathematical Optimization • Computational Mathematics • Verified Numerical Calculations • Dynamic Systems and Optimal Control • Stochastic Systems • Applied Statistics in Technical and Natural Sciences
C15. Performs risk analysis				
	The graduate: a) knows methods for risk assessment and classification b) provides mathematical formulation of risk analysis problems c) has knowledge of decision theory to compare alternatives based on risk	The graduate: a) evaluates the impact of risks and plans measures to mitigate them b) integrates risk analysis into decision-making c) utilizes information technologies for risk analysis	The graduate: a) takes responsibility for the proposed decisions b) makes informed decisions to minimize risks c) collaborates effectively with management teams	• Advanced Topics in Data Analysis • Mathematical Optimization • Stochastic Systems • Applied Statistics in Technical and Natural Sciences • Quantum Fundamentals of Computer Science • Fuzzy Logic and Quantum Logic
C16. Perform data analysis				

	The graduate: a) knows the fundamental principles of data analysis b) understands data structure and query optimization c) understands the behavior of systems that evolve over time.	The graduate: a) applies advanced modeling techniques b) plans and executes analysis projects c) integrates data analysis into decision-making processes d) utilizes AI and machine learning algorithms for Advanced Topics in Data Analysis	The graduate: a) applies best practices in data analysis b) respects the confidentiality of the data used c) determines optimal solutions through scenario analysis based on data d) contributes to modeling complex phenomena through Advanced Topics in Data Analysis	• Advanced Topics in Data Analysis • Data Science • Project in Data Science • Advanced Techniques in Encryption and Information Security • Project in Advanced Techniques in Encryption and Information Security
C17. Identify statistical models				
	The graduate: a) demonstrates knowledge of standard statistical models b) selects appropriate statistical models c) is familiar with model validation techniques	The graduate: a) creates and validates statistical models b) tests statistical models through simulations c) applies optimization techniques to adjust statistical models	The graduate: a) interprets and communicates the results of models b) connects statistical theory with practical applications in technical and scientific fields	• Stochastic Systems • Applied Statistics in Technical and Natural Sciences • Introduction to Machine Learning • Neural Networks • Neural Computations • Quantum Fundamentals of Computer Science • Fuzzy Logic and Quantum Logic
CT1. Think analytically				
	a) The graduate: a) understands problem-solving paradigms in computer science, including algorithms, data structures, and computational complexity. b) is familiar with methods of quantitative and qualitative analysis of data, systems, and processes. c) has knowledge of mathematical and computational models used for evaluating and optimizing solutions.	The graduate: a) develops rational and coherent solutions based on reasoned analysis and critical evaluation of alternatives. b) applies formal models and logical inference techniques to solve computer science problems and make decisions. c) analyzes the behavior and performance of information systems. d) uses tools and technologies to validate hypotheses and verify results.	The graduate: a) demonstrates initiative in selecting and applying appropriate analysis methods. b) shows responsibility for the impact of decisions based on data analysis or implemented models. c) has the ability to rationally and logically justify technical and methodological choices within projects.	• Mathematical Optimization • Computational Mathematics • Verified Numerical Calculations • Dynamic Systems and Optimal Control • Applied Statistics in Technical and Natural Sciences • Neural Networks • Neural Computations • Quantum Fundamentals of Computer Science • Fuzzy Logic and Quantum Logic
CT2. Approach challenges positively				
	The graduate: a) has knowledge of problem-solving methods and decision-making in situations of	The graduate: a) identifies and quickly analyzes the nature of a problem or challenge in an IT	The graduate: a) has the ability to manage their emotions and reactions when facing	All courses, but especially: • Project in Data Science • Project in advanced encryption and

	uncertainty b) is familiar with the concepts of critical thinking and creative thinking	project or process b) remains focused and proactive when facing obstacles, maintaining both individual and team motivation c) integrates negative feedback in a constructive manner	challenges b) has an open and flexible attitude toward change, uncertainty, and difficulties, demonstrating receptiveness to continuous learning and c) improvement in the context of challenges	information security techniques • Project in Artificial Intelligence • Elaboration of the dissertation thesis
CT3. He is attentive to details				
	The graduate: a) has in-depth knowledge of quality standards in software development and automated/manual testing b) understands the importance of details in technical specifications, source code, protocols, data models, algorithms, and structures c) is familiar with validation/verification techniques, auditing, requirements analysis, and debugging	The graduate: a) identifies errors, inconsistencies, or ambiguities in code, documentation, or processes b) applies rigorous methodologies in software verification and validation c) prepares clear and comprehensive documentation, adhering to formal and structural requirements d) develops applications or modules with a high level of accuracy	The graduate: a) takes initiative in identifying and correcting details that may lead to errors b) has a critical and reflective attitude toward their own work c) maintains a high level of quality in all phases of projects	All courses, but especially: • Project in Data Science • Project in advanced encryption and information security techniques • Project in Artificial Intelligence • Elaboration of the dissertation thesis
CT4. It works efficiently				
	The graduate: a) has knowledge of modern methods of collaboration and communication within a team b) understands the principles of team and project management c) is familiar with the standards and best practices for collaborative work in computer science	The graduate: a) utilizes digital collaboration tools b) coordinates and actively participates in project activities, taking on various roles c) applies principles of time management and prioritization in both individual and group work	The graduate: a) takes responsibility for their own tasks and the impact of their work in team projects b) respects the opinions and contributions of other team members c) demonstrates a professional and ethical attitude within the team	All courses, but especially: • Project in Data Science • Project in advanced encryption and information security techniques • Project in Artificial Intelligence • Elaboration of the dissertation thesis
CT5. Work in teams				
	The graduate: a) has knowledge of the principles, dynamics, roles, and responsibilities specific to a work team b) is familiar with interpersonal communication and collaboration techniques	The graduate: a) collaborates effectively with other team members to achieve common goals b) communicates clearly, listens actively, and provides constructive feedback c) uses digital collaborative tools for	The graduate: a) participates actively and responsibly in diverse teams, with autonomy and initiative b) understands and respects individual and collective roles and responsibilities c) supports and	• Project in Data Science • Project in advanced encryption and information security techniques • Project in artificial intelligence • Programming on Mobile Platforms • E-business • Ethics and

	c) can use digital tools that support teamwork	organizing and coordinating teamwork d) contributes to constructive conflict resolution and maintaining a positive work environment	promotes effective collaboration within the team	Professional Deontology • Specialized practice • Volunteering

4. ACADEMIC CAREER DEVELOPMENT

The graduates of the Master of Science (MSc) program in "Advanced Studies in Applied Computer Science", according to the Romanian Occupational Catalogue (COR – ISCO-08), can be employed in the following positions:

2512 – Code 251206: Computer project manager
2120 – Code 212011: Statistician adviser

5. FINAL STIPULATIONS

The Curriculum will be approved, according to the Law 199/2023 by the university Senate and after being signed on each page the President of the Senate. Aproved Curriculum valid for study cycle 2025-2027.

6. ANALYZIS OF THE CURRICULUM

For the curriculum of the Master of Science (MSc) program in "Advanced Studies in Applied Computer Science", the classification of the courses is presented in the following tables:

- The total number of courses divided in categories according the subject type (proficiency, synthesis, advanced):

No. Crt.	Subject Type	Hours - Study program	
		Hours	Ratio %
1	proficiency course (DA)	378	42,2 %
2	synthesis course (DT)	308	34,4 %
3	advanced course (DU)	210	23,4 %
TOTAL		**896**	**100,00%**

- The total number of hours of this program is 896 divided as follows:
  - Compulsory requirements ..... **784 hours**
  - Internship..... **112hours**
  - Internship to prepare the Master Thesis (included in the 784)..... **70hours**

  Total **896 hours**
- Curriculum structure, according course types (compulsory and elective):

Courses	Hours per curriculum	
	Hours	Ratio %
Compulsory courses (including practice)	700	78,1 %
Elective courses	196	21,9 %
TOTAL	896	100%

- The ratio between lectures and practice (seminars, laboratories, projects, internship) is 1:1,3 (392 course hours / 504 practice hours), complying with the ARACIS regulations.
- The Master of Science (MSc) program in "Advanced Studies in Applied Computer Science (English)" complies with the national qualifications provided by the Government Decree HG 412/2025.

- The courses included in the Curriculum and the subjects studied are perfectly aligned with the Bachelor program (BSc) in Informatics (English) (HG 412/2025).
- The curriculum of the Master of Science (MSc) program in "Advanced Studies in Applied Computer Science" complies with the European Credit Transfer and Accumulation System (ECTS) and with the Law 199/2023 on the organizing of university master studies.

7. TIME SKEDULLING OF THE ACADEMIC YEAR (WEEKS)

Year	Didactic activities (weeks)		Exams (weeks)			Internship	Holiday (weeks)		
	Sem. I	Sem. II	Winter session	Summer session	Retake session		Winter	Between semesters	Summer
Year I	14	14	3	3	2	112	2	1	12
Year II	14	14	3	2	1	70 hrs*	2	1	-

*Distributed along the 14 weeks of Sem.II

8. HOURS PER WEEK OF COMPULSORY AND ELECTIVE COURSES

Year	Semester I (hours / week)		Semester II (hours / week)	
	Compulsory courses	Elective courses	Compulsory courses	Elective courses
I	14	0	14	0
II	7	7	7	7

The 112 hours of practical training are mandatory and take place in the first year, in addition to the 14 compulsory hours per semester

9. REQUIREMENTS FOR PASSING, PROMOTION AND COMEBACK

The requirements for passing (admission to the next academic year), promotion or comeback to studies are stated in the RAPS Regulations.

10. THE MASTER THESIS

The requirements for preparing, submitting and defending the Master Thesis are stated in the Regulation on the organization and conduct of bachelor/diploma and dissertation examinations.

- Communicating the subjects for the Master Thesis: October
- Preparing the Master Thesis: November – June
- Submitting and defending the Master Thesis: July
- The final exam consists of defending the Master Thesis (10 credits)

11. THE ECTS CREDITS ASSOCIATED WITH THE MASTER PROGRAM

Total 120**credits**

- 91 credits from compulsory courses
- 29 credits from elective courses
- 2 credits from facultative courses

RECTOR
Associate Professor, PhD Teodor-Florin CILAN

DEAN
Professor, PHD Sorin-Florin NĂDĂBAN

HEAD OF DEPARTMENT
Associate Professor, PhD Lorena Camelia POPA

„Aurel Vlaicu“ University of Arad
Faculty of Exact Sciences
Department: Mathematics and Computer Science
Field: Informatics
Study program: Advanced Studies in Applied Computer Science (English)

CURRICULUM
Academic year 2025-2026
Year I

Code	Subject	Course status	S.I./ Sem (hrs)	Hours per week and Evaluation type											
				1st Semester 14 weeks						2st Semester 14 weeks					
				C	S	L	Pr	Ev	C	C	S	L	Pr	C	K
COMPULSORY COURSES															
GmFA1O01	Analiza avansată a datelor/ Advanced Topics in Data Analysis	DA	119	2	-	2	-	Ex	7	-	-	-	-	-	-
GmFA1O02	Optimizare matematică/ Mathematical optimization	DA	133	2	1	-	-	Ex	7	-	-	-	-	-	-
GmFA1O03	Matematici computaționale / Computational mathematics	DA	133	2	-	1	-	Ex	7	-	-	-	-	-	-
GmFU1O04	Rețele neuronale/ Neural Networks	DU	133	2	-	1	-	Ex	7	-	-	-	-	-	-
GmFT1O05	Etică și deontologie profesională/ Ethics and professional deontology	DT	36	1	-	-	-	C	2						
GmFT2O06	Practică de specialitate/ Specialized practice	DT	112 ore											C	3
GmFU2O07	Introducere în Maschine Learning/ Introduction to Machine Learning	DU	108	-	-	-	-	-	-	2	-	1	-	Ex	6
GmFA2O08	Limbaje de programare pentru baze de date / Programming languages for databases	DA	108	-	-	-	-	-	-	2	-	1	-	Ex	6
GmFA2O09	Sisteme dinamice și control optimal/ Dynamic systems and optimal control	DA	108	-	-	-	-	-	-	2	1	-	-	Ex	6
GmFU2O10	Tehnici avansate de criptare și securitate a informatiei / Advanced encryption and information security techniques	DU	108	-	-	-	-	-	-	2	-	1	-	Ex	6
GmFT2O11	Proiect în tehnici avansate de criptare și securitate a informatiei / Project in advanced encryption and information security techniques	DT	47	-	-	-	-	-	-	-	-	-	2	C	3
TOTAL				**9**	**1**	**4**	**-**	**-**	**30**	**8**	**1**	**3**	**2**	**-**	**30**

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Legend: C – Lecture; S – Seminar; L – Laboratory; P – Project; SI – Individual Study; Ev – Evaluation; K – Credits; DA– proficiency course; DT – synthesis course; DU – advanced course

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Faculty of Exact Sciences
Department: Mathematics and Computer Science
Field: Informatics
Study program: Advanced Studies in Applied Computer Science (English)

CURRICULUM
Academic year 2026-2027
Year II

Code	Subject	Course status	S.I./ Sem (hrs)	Hours per week and Evaluation type											
				1st Semester 14 weeks						2st Semester 14 weeks					
				C	S	L	Pr	Ev	K	C	S	L	Pr	Ev	K
COMPULSORY COURSES															
GmFA3O01	Data science	DA	133	2	-	1	-	Ex	7	-	-	-	-	-	-
GmFT3O02	Metode de cercetare/ Research methods	DT	97	1	1	-	-	C	5	-	-	-	-	-	-
GmFT3O03	Proiect în Data science/ Project in Data science	DT	97	-	-	-	2	C	5	-	-	-	-	-	-
GmFT4O04	Proiect în inteligență artificială / Project in artificial intelligence	DT	122	-	-	-	-	-	-	-	-	-	2	C	6
GmFT4O05	Elaborarea lucrării de disertație / Elaboration of the dissertation thesis	DT	75	-	-	-	-	-	-	-	-	-	5	C	8
	TOTAL			**3**	**1**	**1**	**2**	**-**	**17**	**-**	**-**	**-**	**7**	**-**	**14**
ELECTIVE COURSES															
	Pachet 1														
GmFU3A11	Fundamentele cuantice ale informaticii/ Quantum Fundamentals of Computer Science	DU	108	**2**	**-**	**1**	**-**	Ex	6	**-**	**-**	**-**	**-**	-	-
GmFU3A12	Calcul neuronal aplicat/ Neural Computations	DU	108	**2**	**-**	**1**	**-**	Ex	6	**-**	**-**	**-**	**-**	-	-
	Pachet 2														
GmFA3A21	Calcule numerice validate/ Validated computing	DA	119	**2**	**-**	**2**	**-**	Ex	7	**-**	**-**	**-**	**-**	-	-
GmFA3A22	Sisteme stochastice/ Stochastic systems	DA	119	**2**	**-**	**2**	**-**	Ex	7	**-**	**-**	**-**	**-**	-	-
	Pachet 3														
GmFU4A31	E-business/ E-business	DU	158	**-**	**-**	**-**	**-**	-	-	**2**	**-**	**1**	**-**	Ex	8
GmFU4A32	Programare pe platforme mobile/ Programming on mobile platforms	DU	158	**-**	**-**	**-**	**-**	-	-	**2**	**-**	**1**	**-**	Ex	8
	Pachet 4														
GmFA4A41	Logică fuzzy și logică cuantică / Fuzzy logic and quantum logic	DA	144	**-**	**-**	**-**	**-**	-	-	**2**	**-**	**2**	**-**	Ex	8
GmFA4A42	Statistică aplicată în științe tehnice și naturale/ Applied statistics in technical and natural sciences	DA	144	**-**	**-**	**-**	**-**	-	-	**2**	**-**	**2**	**-**	Ex	8
	TOTAL			**4**	**-**	**3**	**-**	-	13	**4**	**-**	**3**	**-**	-	16
TOTAL				**7**	**1**	**4**	**2**	**-**	**30**	**4**	**-**	**3**	**7**	**-**	**30**
FACULTATIVE COURSES															
GmFT4F06	Voluntariat/ Volunteering	DT	22	-	-	-	-	-	-	-	-	2	-	C	2

Activity	Evaluation	Credits
Final exam for the Master's degree	Exam	10

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DA– proficiency course; DT – synthesis course; DU – advanced course