ANEXA 1

CURRICULUM

Valid for study cycle: 2018-2020
"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" 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 and proposing 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 the ability to propose and convey scientific explanations for socio-economical processes and phenomena
- Nurturing English professional communication proficiency, effective integration within multinational/international research teams

3. SPECIFIC EDUCATIONAL OBJECTIVES (COMPETENCES TO BE ACQUIRED)

Professional educational objectives

C1. Analyze real systems and develop mathematical models for processes and systems that can be applied in engineering and economics.
C2. Solve problems in various fields of sciences using mathematical models and computer systems, and use computer related tools for developing software.

C3. Read specifications and perform data analysis, design, development as well as deployment of databases using software systems.
C4. Perform data analysis and generate and interpret results for supporting decision making processes.
C5. Model various processes, design and deploy computational and symbolic models.
C6. Elaborate comparative studies of computer systems with respect to their functionalities, efficiency, effectiveness and information security.

Transversal educational objectives

CT1. General knowledge of computer systems and their integration in various organizations, and continuously learning new concepts and new technologies in the field of computer science.
CT2. Communicate in English on professional subjects with computer specialists, engineers and economists; elaborate technical reports and scientific memos.
CT3. Teaching and lecturing at high school and university levels in the fields of computer science and informatics and on related subjects.

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 hired in the following positions:

133 – LEADERS IN IT&C SERVICES
1330 – code 133003, Head of computer office
1330 – code 133004, Head of computer laboratory
1330 – code133005, Head of IT division
1330 – code 133006, Head of IT department

212 – MATHEMATICIANS, ACTUARIES ŞI STATISTICIANS
2120 – code 212005, Actuary adviser
2120 – code 212011, Statistician adviser
2120 – code212023,Researcher in mathematics-informatics

2149 – code 214917, Researcher in informatics

251 – SOFTWARE ANALISTS AND PROGRAMMERS
2512 – code251201, Analyst
2512 – code251202, Programmer
2512 – code251204, Programmer of informatics systems
2512 – code251206, Manager of informatics project

252 – SPECIALISTS IN DATABASES AND COMPUTER NETWORKS
2521 – code252101, Database administrator
2522 – code252201, Bank security system administrator
2523 – code252301, Network administrator

5. FINAL STIPULATIONS

The Curriculum will be approved, according to the National Education Law, art.137 (2), by the university Senate and after being signed on each page the President of the Senate. The Curriculum is valid until the next revision.

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):

Nr. crt.	Subject Type	Hours/program		
		Hours	Ratio %	
			Study program	ARACIS regulations
1	proficiency course (DA)	294	37,50 %	min. ---,0
2	synthesis course (DT)	294	37,50 %	min. ---,0
3	advanced course (DU)	196	25 %	min. ---,0
TOTAL		**784**	**100,00%**	---

- The total number of hours of this program is 854 (404 hours of lectures and 448 hours of practical activities) divided as follows:

  - Compulsory requirements..... **770 hours**
  - Internship..... **0 hours**
  - Internship to prepare the Master Thesis ..... **84 hours**

  Total.....**854 hours**

  ARACIS regulations (____ ÷ _____ hours)

- Curriculum structure, according course types (compulsory and elective):

Course	Hours per curriculum	
	Hours	Ratio %
Compulsory courses	644	75, 40 %
Elective courses	210	24,60 % (ARACIS regulations - min --%)
TOTAL	854	100%

- The Internship to prepare the Master Thesis consists of 84 hours.

- The ratio between lectures and practice (seminars, laboratories, projects, internship) is 1:1,14 (392 course hours / 448 practice hours), complying with the ARACIS regulations.

- The Master of Science (MSc) program in "Advanced Studies in Applied Computer Science" complies with the national qualifications provided by the Government Decree HG 1175/2006.

- The courses included in the Curriculum and the subjects studied are perfectly aligned with the Bachelor program (BSc) in Applied Informatics (English language) (HG 1175/2006, HG 676/2007)

- 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 Romanian Law 400/2006 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	-	4	1	10
Year II	14	14	3	2	1	84 hrs*	4	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	9	7	8	8

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 ECTS Regulations, in the Procedure of organizing the didactic activity and students grading and in the Regulation of students' professional activity based on credits transfer.

10. THE MASTER THESIS

The requirements for preparing, submitting and defending the Master Thesis are stated in the Methodology regarding the organizing and conducting the final exams.

„AurelVlaicu" 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 2018-2019
Year I

Code	Subject	Course status	S.I./ Sem (hrs)	Hours per week and Evaluation type											
				1st Semester 14 weeks						2nd Semester 14 weeks					
				C	S	L	Pr	Ev	K	C	S	L	Pr	Ev	K
COMPULSORY COURSES															
GmFA1O01	Advanced Data Analysis	DA	108	2	-	1	-	Ex	6	-	-	-	-	-	-
GmFA1O02	Mathematical Optimization	DA	108	2	1	-	-	Ex	6	-	-	-	-	-	-
GmFU1O03	Computational Mathematics	DU	108	2	-	1	-	Ex	6	-	-	-	-	-	-
GmFU1O04	Fuzzy Control Systems	DU	122	1	-	1	-	Ex	6	-	-	-	-	-	-
GmFT1O05	Ethics and academic integrity	DT	36	1	-	-	-	Cn	2	-	-	-	-	-	-
GmFT1O06	Project on Artificial Intelligence	DT	72	-	-	-	2	Cn	4	-	-	-	-	-	-
GmFT2O01	Integrated Information Systems	DT	133	-	-	-	-	-	-	2	-	1	-	Ex	7
GmFA2O02	Database Programming Languages	DA	133	-	-	-	-	-	-	2	-	1	-	Ex	7
GmFA2O03	Dynamic Systems and Optimal Control	DA	108	-	-	-	-	-	-	2	1	-	-	Ex	6
GmFT2O04	Programming in CAD Applications	DA	108	-	-	-	-	-	-	2	-	1	-	Ex	6
GmFT2O05	Project on Databases	DT	72	-	-	-	-	-	-	-	-	-	2	Cn	4
TOTAL				**8**	**1**	**3**	**2**	**-**	**30**	**8**	**1**	**3**	**2**	**-**	**30**

RECTOR
Prof. dr. Ramona Lile

DEAN
Prof. dr. Mariana Nagy

HEAD OF DEPARTAMENT
Prof. dr. GhiocelMoț

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

Faculty of Exact Sciences
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CURRICULUM
Academic year 2019-2020
Year II

Code	Subject	Course status	S.I./ Sem (hrs)	Hours per week and Evaluation type											
				1st Semester 14 weeks						2nd Semester 14 weeks					
				C	S	L	Pr	Ev	K	C	S	L	Pr	Ev	K
COMPULSORY COURSES															
GmFT3O01	Research Methods	DT	108	2	1	-	-	Ex	6	-	-	-	-	-	-
GmFA3O02	Modern Solutions for E-business	DA	108	2	-	1	-	Ex	6	-	-	-	-	-	-
GmFT3O03	Project on E-business	DT	97	-	-	-	2	Cn	5	-	-	-	-	-	-
GmFT4O04	Project on Decision Support Systems	DT	72	-	-	-	-	-	-	-	-	-	2	Cn	4
GmFT4O05	Internship to prepare the Master Thesis	DT	216	-	-	-	-	-	-	-	-	-	6	Cn	12
	TOTAL			**4**	**1**	**1**	**2**	**-**	**17**	**-**	**-**	**-**	**8**	**-**	**16**
ELECTIVE COURSES															
	Package 1														
GmFU3A11	Applications of Lie Algebra	DU	108	2	-	1	-	Ex	6	-	-	-	-	-	-
GmFU3A12	Neural Networks	DU	108	2	-	1	-	Ex	6	-	-	-	-	-	-
	Package 2														
GmFU3A21	Programming on Mobile Platforms	DU	133	2	-	1	-	Ex	7	-	-	-	-	-	-
GmFU3A22	Stochastic Systems	DU	133	2	-	1	-	Ex	7	-	-	-	-	-	-
	Package 3														
GmFU4A31	Applied Neural Computations	DU	133	-	-	-	-	-	-	2	-	1	-	Ex	7
GmFU4A32	Decision Support Systems	DU	133	-	-	-	-	-	-	2	-	1	-	Ex	7
	Package 4														
GmFA4A41	Information Systems Security	DA	133	-	-	-	-	-	-	2	-	1	-	Ex	7
GmFA4A42	Applied Statistics for Natural and Technical Sciences	DA	133	-	-	-	-	-	-	2	-	1	-	Ex	7
	TOTAL			**4**	**-**	**2**	**-**	**-**	**13**	**4**	**-**	**2**	**-**	**-**	**14**
TOTAL				**8**	**1**	**3**	**2**	**-**	**30**	**4**	**-**	**2**	**8**	**-**	**30**

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

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