

CURRICULA

I. SYNTHETIC DESCRIPTION OF THE PROGRAM

Denumirea programului de studii: **COMPUTER SCIENCE**
Domeniul fundamental: **COMPUTER SCIENCE**
Domeniul de licență: **COMPUTER SCIENCE IN ENGLISH**
Titlul absolventului: **Degree in Computer Science**
Durata studiilor: **3 ani, 6 semestre, 180 de credite**
Forma de învățământ: **full-time studies**
Finalizarea studiilor: **bachelor exam, 10 credits ECTS**
Calificări/opportunități¹: **Analist/251201, Programator de sistem informatic/251204, Inginer de sistem în informatică/251203**
Correspondența ESCO-08: **2511/ Systems Analyst, 2512/ Software developers**
Acces în ciclul de masterat: **yes**
Available starting with the academic year: **2021/2022**

Mission:

Training education specialist's degree in Computer Science, specializing in Computer Science: the study programme prepares programmers, analysts - programmers, system software engineers, computer network administrators, data base administrators, IT consultants and – provided crossing a pedagogical module training organized by the Department of Teacher Training – teachers Informatics specialization in primary and secondary education.

Objectives:

- Acquiring theoretical knowledge needed for the implementation of software systems and the management of computer networks;
- Practical skills training necessary to achieve software systems and network infrastructure installation and management;
- Developing communication and collaborations skills that are specific in elaboration of projects for IT & C solutions and services.

II. COMPETENCES PROFILE OF GRADUATE

The graduates of the study program proposed for the **Computer Science** specialization, acquire the following professional competences:

A. General competences:

- written and oral professional communication capacity, including a foreign language of international use;
- learning ability and self-improvement, responsiveness to the field news;
- scientific approachability of specialized field – ability to analyze, synthesize and interpret specialized information;
- ability to work in a team; ability to work with specialists in other fields;
- ability to continue their undergraduate studies with university masters and then PhD

B. Specific competences in:

- the analysis and design of computer systems: the analysis and design of computer systems: conception, design, development, testing, implementation and maintenance of computer systems and programs, preparing technical documentation
- projects management for IT&C solutions, ensuring the functionality, monitoring and development of implemented IT&C solutions, personnel training for use implemented IT&C technologies, coordinating teams of specialists
- designing, installing and managing network infrastructure, ensuring the functionality of the network computers and connectivity and communication equipments, the administration of servers, interconnection of networks and access to the global Internet network, the design and implementation of network security strategy;
- development of projects for IT&C solutions and services, design/redesign of IT&C solutions for the most complex components of the system, coordination of projects and IT&C teams, performance monitoring of implemented IT&C solutions, personnel training for using IT&C technologies;
- training in information technology in primary and secondary education.

¹ Ocupații posibile conform

RECTOR

PROF. UNIV. DR. VALER DANIEL BREAZ



DECAN

CONF. UNIV. DR. CORINA ROTAR

DIRECTOR DE DEPARTAMENT

LECT. UNIV. DR. MIHAELA ALDEA

Professional competences:

1. Programming in high-level languages
2. Development and maintenance of computer applications
3. The use of computer tools in an interdisciplinary context
4. The use of the theoretical basis of computer science and of formal models
5. Design and management of databases
6. Design and management of computer networks

Transversal competences:

CT1 The application of rules for organized and efficient work, of responsible attitudes towards the scientific and didactic domain, for the creative realization of one's own potential following the principles and norms of professional ethics.

CT2 The efficient fulfillment of activities in an interdisciplinary group and the development of skill such as empathic interpersonal communication, establishing relations and collaboration with various groups.

CT3 The use of efficient methods and techniques for learning, scientific inquiry and development of the capacities of using knowledge, of adapting to a dynamic society and of communicate on in English.

III. REQUIREMENTS FOR GETTING THE BACHELOR DEGREE

Number of ECTS credits for compulsory courses: 150 (83,33%)

Number/percent of ECTS credits for elective courses: 30 (16,67%)

Number of ECTS credits for assessment exam of fundamental and speciality knowledge: 5

Number of ECTS credits for Bachelor's Paper defence and presentation: 5

IV. THE STRUCTURE OF THE ACADEMIC YEARS (per number of weeks)

Academic years	Didactic activities		Examination sessions			Practice	Holidays		
	Winter semester	Summer semester	Winter	Summer	Not passing exam		Winter	Between semesters	Summer
I	14	14	3	3	2	-	3	1	11
II	14	14	3	3	2	3	3	1	8
III	14	14*	3	3+1	-	-	3	1	-
TOTAL	42	42	9	9+1	4	3	9	3	19

* 12 weeks didactic activity + 2 weeks finalizing of the bachelor's thesis

V. NUMBER OF HOURS PER WEEKS (COMPULSORY AND COMPULSORY ELECTIVE COURSES)

Academic years	Winter Semester					Summer Semester				
	C	S	L	P	TOTAL	C	S	L	P	TOTAL
I	10	8	4	0	22	10	6	6	0	22
II	12	2	10	0	24	12	1	10	0	23
III	10	2	10	0	22	8	3	8	4	23
TOTAL	32	36	68	68	30	38	68	68	68	

VI. CONDIȚII DE PROMOVARE

According to the Regulation on the professional activity of students for both Cycle I - bachelor and Cycle II - master, approved by the UAB Senate on 27.11.2019, for access to the higher year, students must accumulate a minimum of 20 ECTS credits, related to the compulsory and elective courses in the curriculum.

RECTOR
 PROF. UNIV. DR. VALER DANIEL BREAZ



DECAN
 CONF. UNIV. DR. CORINA ROTAR

DIRECTOR DE DEPARTAMENT
 LECT. UNIV. DR. MIHAELA ALDEA

VII. ELECTIVE COURSES

No.	Courses ² from the elective package	Year	Semester	No. of ECTS credits	Credits weight
1	CSE206, CSE207	II	1	6	3,33%
2	CSE305, CSE306, CSE307	III	1	6	3,33%
3	CSE311, CSE312	III	2	6	3,33%
4	CSE313, CSE314	III	2	6	3,33%
5	CSE315, CSE316	III	2	6	3,33%
Total				30	16,66%

²The course are identified with codes

VIII. BACHELOR'S DEGREE EXAMINATION

Drawing up the bachelor's thesis: semester 5 and 6

Bachelor's thesis refinement: 2 weeks in semester 6

Bachelor's thesis defence: June – July, September, February

Bachelor's degree examination: 10 credits

- Number of ECTS credits for assessment exam of fundamental and speciality knowledge: 5
- Number of ECTS credits for Bachelor's Paper defence and presentation: 5

The curriculum includes a package of optional courses related to the pedagogical module that are presented in the annex.

RECTOR
PROF. UNIV. DR. VALER DANIEL BREAZ



DECAN
CONF. UNIV. DR. CORINA ROTAR

DIRECTOR DE DEPARTAMENT
LECT. UNIV. DR. MIHAELA ALDEA

IX. THE STRUCTURE OF THE EDUCATION PLAN

Year I

Academic year 2021-2022

No.	Courses code	Courses	Type of courses	Number of weeks	Number of hours of learning activities										Modes of assessment	Number of ECTS credits	
					Collective activities						Individual/ Independent activities						
					Didactic Activity				Total per week	Total per semester	Thematical Training discipline			Total per semestre			
					Course	Seminar	Lab	Practical training			Thematical Training discipline	Practical Training discipline	Total per semestre				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
WINTER SEMESTER																	
Compulsory Courses																	
1	CSE 101	Computer system architecture	F	14	2	-	2	-	4	56	67	27	94	150	E	6	
2	CSE 102	Mathematical and computational logics	F	14	2	1	-	-	3	42	41	17	58	100	E	4	
3	CSE 103	Programming basics	F	14	2	-	2	-	4	56	85	34	119	175	E	7	
4	CSE 104	Linear algebra and analytical and differential geometry	C	14	2	2	-	-	4	56	49	20	69	125	C	5	
5	CSE 105	Mathematical analysis	C	14	2	2	-	-	4	56	67	27	94	150	E	6	
Complementary courses																	
6	CSE 106.1	English language 1	C	14	-	2	-	-	2	28	16	6	22	50	C	2	
	CSE 106.2	French language 1															
	CSE 106.3	German language 1															
7	CSE 107	Sport and physical education 1	C	14	-	1	-	-	1	14	-	-	36	50	C-A/R	2*	
Total compulsory courses					14	10	8	4	0	22	308	325	131	492	800	4E+3C	30
TOTAL SEMESTRE					14	10	8	4	0	22	308	325	131	492	800	4E+3C	30
Facultative courses																	
8	CSE 108	Embedded systems architecture	F	14	2	-	-	-	2	28	-	-	-	-	C	2	
SUMMER SEMESTER																	
Compulsory courses																	
1	CSE 109	Data structures	F	14	2	2	2	-	6	84	75	41	116	200	E	8	
2	CSE 110	Operating systems	F	14	2	-	2	-	4	56	85	34	119	175	E	7	
3	CSE 111	Graph algorithms	F	14	2	-	2	-	4	56	85	34	119	175	E	7	
4	CSE 112	Probabilistic and mathematical statistics	F	14	2	1	-	-	3	42	67	41	108	150	E	6	
Complementary courses																	
6	CSE114.1	English language 2	C	14	-	2	-	-	2	28	14	12	22	50	C	2	
	CSE114.2	French language 2															
	CSE114.3	German language 2															
7	CSE 115	Sport and physical education 2	C	14	-	1	-	-	1	14			36	50	C-A/R	2*	
Total compulsory courses					14	8	6	6	0	20	280	326	162	484	800	4E+2C	30
TOTAL SEMESTER					14	8	6	6	0	20	280	326	162	484	800	4E+2C	30
Facultative courses																	
8	CSE 116	Computational geometry	F	14	2	1	1	-	4	56	-	-	-	-	-	4	
Compulsory study programme					28	18	14	10	0	42	588	651	293	976	1600	8E+5C	60

The abbreviation used in the table: E – final exam; C – colloqui examination; A/R – accepted/rejected

*In the total number of credits per semester is not included the sport and physical education

RECTOR
 PROF. UNIV. DR. V. ERDANIEL BREAZ



DECAN
 CONF. UNIV. DR. CORINA ROTAR

DIRECTOR DE DEPARTAMENT
 LECT. UNIV. DR. MIHAELA ALDEA

No.	Courses code	Courses	Type of courses	Number of weeks	Number of hours of learning activities										Modes of assessment	Number of ECTS credits
					Collective activities						Individual/ Independent activities					
					Didactic Activity				Total per week	Total per semester	Thematical Training discipline			Total number of hour per semestre		
					Course	Seminar	Lab	Practical training			Thematical Training discipline	Practical Training discipline	Total per semestre			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
WINTER SEMESTER																
COMPULSORY COURSES																
1	CSE201	Databases	F	14	2	-	2	-	4	56	49	20	69	125	E	5
2	CSE202	Fundamental algorithms	F	14	2	-	2	-	4	56	49	20	69	125	E	5
3	CSE203	Computer networks	F	14	2	-	2	-	4	56	49	20	69	125	E	5
4	CSE204	Object oriented programming	S	14	2	-	2	-	4	56	49	20	69	125	E	5
5	CSE205	Differential and partial derivates equations	C	14	2	2	-	-	4	56	31	13	44	100	C	4
Total compulsory courses				14	10	2	8	0	20	280	227	93	320	600	4E+1C	24
Optional courses																
6	CSE206	Mathematical software	F	14	2	-	2	-	4	56	67	27	94	150	C	6
	CSE207	Complex analysis														
Total optional courses				14	2	0	2	0	4	56	67	27	94	150	C	6
TOTAL SEMESTER				14	12	2	10	0	24	336	294	120	414	750	4E+2C	30
Facultative courses																
7	CSE 208	Project	F	14	2	1	1	-	4	56	-	-	-	-	V	4
SUMMER SEMESTER																
Compulsory courses																
1	CSE209	Formal language sand automata	F	14	2	-	2	-	4	56	31	13	44	100	C	4
2	CSE210	Numerical calculus	S	14	2	-	2	-	4	56	31	13	44	100	E	4
3	CSE211	WEB applications development	S	14	2	-	2	-	4	56	31	13	44	100	E	4
4	CSE212	Database management systems	S	14	2	-	2	-	4	56	31	13	44	100	E	4
5	CSE213	Advanced programming techniques	S	14	2	-	2	-	4	56	49	20	69	125	E	5
6	CSE214	Optimization techniques	S	14	2	1	-	-	3	42	41	17	58	100	C	4
7	CSE215	Speciality internship*	S	14	-	-	-	-	-	112	11	2	13	125	C	5
Total compulsory courses				14	12	1	10	0	23	434	225	91	316	750	4E+3C	30
TOTAL SEMESTER				14	12	1	10	0	23	434	225	91	316	750	4E+3C	30
Facultative courses																
8	CSE 216	Embedded systems programming	F	14	2	1	1	-	4	56	-	-	-	-	V	4
Compulsory study programme - total				28	24	3	20	0	47	770	519	211	730	1500	8E+5C	60

*Speciality internships cumulative, three weeks at the end of summer semester weeks (112 hours) or during the academic year



RECTOR
 PROF. UNIV. DR. VALER DANIEL BREAZ

DECAN
 CONF. UNIV. DR. CORINA ROTAR

DIRECTOR DE DEPARTAMENT
 LECT. UNIV. DR. MIHAELA ALDEA

No.	Courses code	Courses	Type of courses	Number of weeks	Number of hours of learning activities										Modes of assessment	Number of ECTS credits
					Collective activities						Individual/Independent activities			Total number of hours per semester		
					Didactic Activity				Total per week	Total per semester	Thematical Training discipline	Practical Training discipline	Total per semestre			
					Course	Seminar	Lab	Practical training								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
WINTER SEMESTER																
COMPULSORY COURSES																
1	CSE301	Artificial intelligence	F	14	2	-	2	-	4	56	67	27	94	150	C	6
2	CSE302	Computer graphics	S	14	2	-	2	-	4	56	67	27	94	150	E	6
3	CSE303	Software engineering	S	14	2	-	2	-	4	56	67	27	94	150	E	6
4	CSE304	Development of mobile application	S	14	2	-	2	-	4	56	67	27	94	150	E	6
Total compulsory courses				14	8	-	8	0	16	224	268	108	376	600	3E+1C	24
Complementary courses																
5	CSE305	Programming environments and tools	S	14	2	2	2	-	6	84	47	19	66	150	E	6
	CSE306	Multimedia techniques and technologies														
	CSE307	Ethics and academic integrity														
Total complementary courses				14	2	2	2	0	6	84	47	19	66	150	1E	6
TOTAL SEMESTER				14	10	2	10	0	22	308	315	127	442	750	4E+1C	30
Facultative courses																
6	CSE 308	Intelligent robots	C	14	2	1	1	-	4	56	-	-	-	-	V	4
SUMMER SEMESTER																
Compulsory courses																
1	CSE309	Modeling and simulation	S	12	2	-	2	-	4	48	73	29	102	150	E	6
2	CSE310	Practice for the development of the bachelor's thesis	S	12	-	-	-	4	4	48	73	29	102*	150	C	6
Total compulsory courses				12	2	0	2	4	8	96	146	58	204	300	1E+1C	12
Optional courses																
3	CSE311	Machine learning	S	12	2	1	2	-	5	60	64	26	90	150	E	6
	CSE312	Evolutionary computing														
4	CSE313	Computational intelligence	S	12	2	-	2	-	4	48	73	29	102	150	E	6
	CSE314	Neuronal networks and applications														
5	CSE315	Information systems security	F	12	2	2	2	-	6	72	56	22	78	150	C	6
	CSE316	Automata, computing and complexity														
Total optional courses				12	6	3	6	0	15	180	193	77	270	450	2E+1C	18
TOTAL SEMESTER				12	8	3	8	4	23	276	339	135	474	750	3E+2C	30
Facultative courses																
6	CSE 317	IT projects management	C	12	-	1	-	-	1	12	-	-	-	-	V	2
Compulsory study programme - total				26	19	3	18	4	44	584	654	262	916	1500	7E+3C	60

* Independent activities take place cumulatively in the last 2 weeks of the semester

RECTOR
PROF. UNIV. DR.



DECAN
CONF. UNIV. DR. CORINA ROTAR

DIRECTOR DE DEPARTAMENT
LECT. UNIV. DR. MIHAELA ALDEA

X. The structure of the number of hours for didactic activities according to the thype of course imposed with a view to ensuring the training

Courses	Year I Winter semester	Year I Summer semester	Year II Winter semester	Year II Summer semester	Year III Winter semester	Year III Summer semester	Total without speciality internship	Percentage	Total with internship speciality (112 hours - second year, Summer semester)	Percentage with internship (112 hours)
Compulsory courses	308	280	280	322	224	96	1510	82,51 (70-83%)	1622	73,12%
Optional compulsory courses	-	-	56	-	84	180	320	17,49 (>17)	320	14,43%
Total compulsory and optional compulsory courses	308	280	336	322	308	276	1830	100	1942	87,55%
Other facultative course	28	56	56	56	56	24	276	-	276	12,45%
Total facultative course	28	56	56	56	56	24	276	-	276	12,45%
TOTAL	336	336	392	378	364	300	2106	-	2218	100,00%

XI. Number of hours for the complete bachelor cycle, without facultative courses

Study year	Semester	Number of weeks	Number of hours/weeks	Number of hours Speciality internship	Total hours (without internship)	Total hours (with internship)
I	1	14	22		308	308
i	2	14	22		280	280
II	1	14	24		336	336
II	2	14	23	112	322	434
III	1	14	22		308	308
III	2	12	23		276	276
Total				112	1830	1942



RECTOR
PROF. UNIV. DR. VALERDANIEL BREAZ

DECAN
CONF. UNIV. DR. CORINA ROTAR

DIRECTOR DE DEPARTAMENT
LECT. UNIV. DR. MIHAELA ALDEA

XII. ARACIS's specific standards

1. General structure

Courses	Year I, Winter semester	Year I, Summer semester	Year II, Winter semester	Year II, Summer semester	Year III, Winter semester	Year III, Summer semester	Total without internship	Total with internship	Percentage without internship	Percentage with internship
Fundamental courses	154	238	224	56	56	72	800	800	43.72%	41.19% (35-45%)
Specialization courses	-	-	56	266	252	204	778	890	42.51%	45.83% (35-50%)
Complementary courses	154	42	56	-	-	-	252	252	13.77%	12.98% (10-20%)
TOTAL							1830	1942	100,00%	100,00%

2. Report course hours/applicative hours, per total compulsory and optional compulsory courses

Activities	Year I Winter semester	Year I Summer semester	Year II Winter semester	Year II Summer semester	Year III Winter semester	Year III Summer semester	Total without internship	Total with internship (112 hours)
Courses	140	112	168	168	140	96	824	964
Seminars, labs, practice	168	168	168	154	168	132+48*	958	1006
The report between applicative hours and course hours is 1,12 (this report is calculated without the speciality internship hours and those related to the development of the bachelor's thesis)								

3. Number of courses

Courses	Fundamental compulsory	Speciality compulsory	Complementary compulsory	Total
Total number of complementary courses	14	15	7	36

4. The share of courses in other areas of science, in all complementary and optional compulsory courses

Courses	Total number of hours	Percentage
Other fields of science	84	26%
Total number of complementary courses	320	100%

5. The share of credits in the compulsory courses decided by student

Courses	Credits	Percentage
Compulsory	150	83%
Optional compulsory	30	17%
Total	180	100 %

6. The share of hours in the compulsory courses decided by student

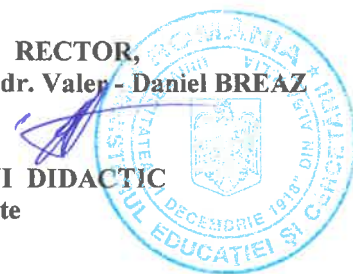
Courses	Hours	Percentage
Compulsory	1566	80.64%
Optional compulsory	376	19.36% (17-30%)
Total	1942	100,00%



RECTOR
PROF. UNIV. DR. VALER DANTE BREAZ

DECAN
CONF. UNIV. DR. CORINA ROTAR

DIRECTOR DE DEPARTAMENT
LECT. UNIV. DR. MIHAELA ALDEA



PLAN DE ÎNVĂȚĂMÂNT
al DEPARTAMENTULUI PENTRU PREGĂTIREA PERSONALULUI DIDACTIC
pentru programul de studii psihopedagogice de 30 de credite
Nivelul I (inițial) de certificare pentru profesia didactică
- monospecializare -

Valabil începând cu anul universitar 2021-2022

Cod disciplină	Discipline de învățământ	Perioada de studiu a disciplinei			Număr de ore pe săptămână		Total ore			Forme de evaluare	Număr de credite
		Anul	Semestrul	Număr de săptămâni	C	A	C	A	Total		
0	1	2	3	4	5	6	7	8	9	10	11
Curriculum-nucleu											
Discipline de pregătire psihopedagogică fundamentală (obligatorii)											
MP1 1101	Psihologia educației	I	1	14	2	2	28	28	56	E	5
MP1 1202	Pedagogie I: - Fundamentele pedagogiei - Teoria și metodologia curriculum-ului	I	2	14	2	2	28	28	56	E	5
MP1 2303	Pedagogie II: - Teoria și metodologia instruirii - Teoria și metodologia evaluării	II	3	14	2	2	28	28	56	E	5
MP1 3607	Managementul clasei de elevi	III	6	14	1	1	14	14	28	E	3
Discipline de pregătire didactică și practică de specialitate (obligatorii)											
MP1 2404	Didactica specializării* - Informatică	II	4	14	2	2	28	28	56	E	5
MP1 3505	Instruire asistată de calculator	III	5	14	1	1	14	14	28	C	2
MP1 3506	Practică pedagogică în învățământul preuniversitar obligatoriu (I)* - Informatică	III	5	14	-	3	-	42	42	C	3
MP1 3608	Practică pedagogică în învățământul preuniversitar obligatoriu (II)* - Informatică	III	6	12	-	3	-	36	36	C	2
TOTAL - Nivelul I											
		-	-	-	-	-	140	218	358	5E+3C	30
	Examen de absolvire: Nivelul I	III	6	2	-	-	-	-	-	E	5

*La disciplinele "Didactica specializării" și "Practică pedagogică" se va completa obligatoriu precizând explicit specializarea conform art. 12, alin.4 din OMEN 4.129/16.07.2018

C = Cursuri, A = Activități aplicative (seminarii, laboratoare, practică)

Precizări:

1. Numărul de săptămâni și, respectiv, numărul de ore pentru practica pedagogică rezultă din faptul că, potrivit standardelor actuale, ultimul semestru al studiilor universitare este de 10-12 săptămâni.
2. Perioada de 2 săptămâni pentru examenul de absolvire este alocată pentru finalizarea portofoliului didactic.
3. Se aplică și în cazul studiilor universitare de licență cu durata 4/5/6 ani.
4. Planul de învățământ este aprobat prin OMEN nr. 3.850 / 02.05.2017, Anexa nr. 2a și OMEN nr. 4.129 / 16.07.2018.

DECAN,
CONF. UNIV. DR. TUDORAȘCU MIHAELA MIRUNA

DIRECTOR DE DEPARTAMENT
CONF. UNIV. DR. TODOR IOANA CRISTINA