

MINISTERUL EDUCAȚIEI



Universitatea „Ovidius” din Constanța

AVIZAT DSAMC/DACIS

UNIVERSITATEA “OVIDIUS” DIN CONSTANȚA
FACULTATEA de MATEMATICĂ ȘI INFORMATICĂ

PLAN DE ÎNVĂȚĂMÂNT

(conține 12 pagini)

Domeniul fundamental: **Matematică și științe ale naturii**
Domeniul de licență: **Informatică**
Ciclul de studii: **I**
Programul de studii: **Informatică în limba engleză**
Durata studiilor: **3 ani**
Forma de învățământ: **cu frecvență (IF)**

Valabil începând cu ANUL UNIVERSITAR 2022-2023



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UNIVERSITATEA OVIDIUS DIN CONSTANȚA

Bd. Mamaia nr. 124, 900527 Constanța, România - Tel./Fax: +4 0241 606.407, +4 0241 606.467
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FACULTATEA de Matematică și Informatică

Domeniul fundamental: MATEMATICĂ ȘI ȘTIINȚELE NATURII

Domeniul de licență: INFORMATICĂ

Programul de studii: INFORMATICĂ ÎN LIMBA ENGLEZĂ

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1. MISSION OF THE STUDY PROGRAM

Bachelor's degree program in the field Computer Science aims the training of qualified specialists in the main fields of Information and Communications Technology, with abilities in the immediate application of the acquired knowledge to the demands of the labor market and in terms of continuous academic development by the Masters and PhD programs.

The Computer Science program purpose is to create a sound knowledge base for the attendees, allowing the continuation and the development of the 2nd and the 3rd cycle studies – the Master and the PhD programs; the main goal is to prepare specialists and scientists in the field of Information and Communications Technology.

This study program is organized according to the Bologna educational system and it is adapted to the modern changes in the European degree programs in the field of Computer Science. The relationship between student and teacher is one of partnership, where everyone takes responsibility to achieve the learning outcomes. The learning results are explained and discussed with the students in terms of their relevance for academic development.

2. PROFESSIONAL QUALIFICATION, RELATIONSHIP WITH THE CLASSIFICATION OF OCCUPATIONS IN ROMANIA (COR) - UPDATED FORM (OCCUPATIONS, POSSIBILITIES OF INTEGRATION ON THE LABOR MARKET)

Analist - 251201; Inginer de sistem în Informatică - 251203; Programator de sistem informatic – 251204.

3. DESCRIPTION OF PROFESSIONAL AND TRANSVERSAL COMPETENCES THAT DEFINE THE TARGETED PROFESSIONAL QUALIFICATION

Professional competencies



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C6. Design and administration of computer networks

C7. Using the concepts and techniques of artificial intelligence to solve real world problems

Transversal competencies

CT1. Applying the rules of rigorous and efficient work, manifesting responsible attitudes towards the didactic-scientific field, for the optimal and creative capitalization of one's own potential in specific situations, respecting the principles and norms of professional ethics;

CT2. Efficient conduct of team activities

CT3. The efficient use of information sources and of the resources of communication and assisted professional training, both in Romanian and in a language of international circulation.

4. ADMISSION

Admission to undergraduate studies is based on the methodology approved by the university Senate.

5. EDUCATION CERTIFICATION

The Bachelor's degree program Informatică în limba engleză has provisional authorization according to AP – HG 467/10.06.2019, with the last ARACIS assessment in 27.06.2019.



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EDUCATIONAL PLAN ANUL I

Nr. crt.	Cod disciplină	*C1	**C2	Discipline	Semestrul 1 (14 săptămâni)							Semestrul 2 (14 săptămâni)							Nr. ore pe disciplină						
					SI	C	S	L	P	F.V.	CR	SI	C	S	L	P	F.V.	CR	Total	Curs	Aplicații				
				Discipline impuse																					
1.	FMI.CS.I.1.01	DC	DI	Mathematical Analysis	69	2	2			Ex	5									56	28	28			
2.	FMI.CS.I.1.02	DF	DI	Data Structures	94	2		2		Ex	6									56	28	28			
3.	FMI.CS.I.1.03	DF	DI	Fundamentals of Programming	94	2		2		Ex	6									56	28	28			
4.	FMI.CS.I.1.04	DC	DI	Linear Algebra	69	2		2		Ex	5									56	28	28			
5.	FMI.CS.I.1.05	DF	DI	Computer Architectures	94	2		2		C	6									56	28	28			
6.	FMI.CS.I.1.06	DC	DI	Sports I	11		1			C	(1)									14		14			
7.	FMI.CS.I.2.09	DF	DI	Differential and Integral Calculus															5	56	28	28			
8.	FMI.CS.I.2.10	DF	DI	Fundamental Algorithms															6	56	28	28			
9.	FMI.CS.I.2.11	DF	DI	Algebraical Fundamentals of Informatics								44	2		2		Ex	4	56	28	28				
10.	FMI.CS.I.2.12	DC	DI	Analytic and Differential Geometry								44	2		2		C	4	56	28	28				
11.	FMI.CS.I.2.13	DS	DI	Object Oriented Programming I								94	2		2		Ex	6	56	28	28				
12.	FMI.CS.I.2.14	DS	DI	Specialization Practice								15			60		C	3	60		60				
13.	FMI.CS.I.2.15	DC	DI	Sports II								11		1			C	(1)	14		14				
				Discipline optionale																					
14.	FMI.CS.I.1.07.1	DC	DO	Foreign language: German Language I	22		2			C	2									28		28			
15.	FMI.CS.I.1.07.2	DC	DO	Foreign language: French Language I																					
16.	FMI.CS.I.2.16.1	DC	DO	Foreign language: German Language II								22		2			C	2	28		28				
17.	FMI.CS.I.2.16.2	DC	DO	Foreign language: French Language II																					
Total ore					453	10	5	8		4/2+1	30+1	393	10	5	8		4/3+1	30+1	704	280	424				



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Nr. crt.	Discipline facultative	Cod disciplină	Semestrul 1							Semestrul 2							Nr. de ore pe disciplină		
			SI	C	S	L	P	F.V.	CR	SI	C	S	L	P	F.V.	CR	Total	Curs	Aplicații
18.	Communication sciences	FMI.CS.I.1.08	44	2	2				C 4								56	28	28
19.	Scientific writing in LaTeX	FMI.CS.I.2.17								44	2	2			C	4	56	28	28
Total ore discipline facultative/ Total număr credite			4/4							4/4							112	56	56



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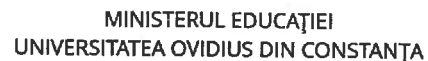
Forma de învățământ: cu frecvență (IF):

Durata studiilor: 3 ani

Valabil începând cu ciclul de studii: 2022-2025

EDUCATIONAL PLAN ANUL II

Nr. crt.	Cod disciplină	*C1	**C2	Discipline	Semestrul 1 (14 săptămâni)								Semestrul 2 (14 săptămâni)								Nr. de ore pe disciplină				
					SI	C	S	L	P	F.V.	CR	S	SI	C	S	L	P	F.V.	CR	S					
				Discipline impuse																					
1.	FMI.CS.II.1.01	DF	DI	Graphs Algorithms	69	2		2			Ex	5													
2.	FMI.CS.II.1.02	DF	DI	Operating Systems	94	2		2			Ex	6													
3.	FMI.CS.II.1.03	DF	DI	Formal Languages and Compilers	94	2		2			Ex	6													
4.	FMI.CS.II.1.04	DF	DI	Mathematical and Computational Logic	94	2		2			Ex	6													
5.	FMI.CS.II.1.05	DF	DI	Computational Geometry	69	2		2			C	5													
6.	FMI.CS.II.1.06	DC	DI	Sports III	11			1			C	(1)													
7.	FMI.CS.II.2.09	DC	DI	Differential and Partial Differential Equations																					
8.	FMI.CS.II.2.10	DS	DI	Probability Theory and Elements of Mathematical Statistics																					
9.	FMI.CS.II.2.11	DS	DI	Numerical Analysis																					
10.	FMI.CS.II.2.12	DF	DI	Databases																					
11.	FMI.CS.II.2.13	DS	DI	Web Technologies																					
12.	FMI.CS.II.2.14	DS	DI	Specialization practice																					
13.	FMI.CS.II.2.15	DC	DI	Sports IV																					
				Discipline optionale																					
14.	FMI.CS.II.1.07.1	DC	DO	Foreign language: German Language III	22		2				C	2													
15.	FMI.CS.II.1.07.2	DC	DO	Foreign language: French Language III																					
16.	FMI.CS.II.2.16.1	DC	DO	Foreign language: German Language IV									22		2				C	2	28				
17.	FMI.CS.II.2.16.2	DC	DO	Foreign language: French Language IV																					



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EDUCATIONAL PLAN

ANUL III

Nr. crt.	Cod disciplină	*C1	**C2	Discipline	Semestrul 1 (14 săptămâni)								Semestrul 2 (12+2 săptămâni)								Nr. de ore pe disciplină		
					SI	C	S	L	P	F.V.	CR	SI	C	S	L	P	F.V.	CR	Total	Curs	Aplicații		
Discipline impuse																							
1.	FMI.CS.III.1.01	DS	DI	Databases Management Systems	83	1		2		Ex	5									42	14	28	
2.	FMI.CS.III.1.02	DF	DI	Computer Networks	69	2		2		Ex	5									56	28	28	
3.	FMI.CS.III.1.03	DS	DI	Advanced Programming Techniques	83	1		2		Ex	5									42	14	28	
4.	FMI.CS.III.2.08	DF	DI	Artificial Intelligence								77	2		2		Ex	5	48	24	24		
5.	FMI.CS.III.2.09	DS	DI	Optimization Techniques								77	2		2		Ex	5	48	24	24		
6.	FMI.CS.III.2.10	DS	DI	Computer Graphics								77	2		2		Ex	5	48	24	24		
7.	FMI.CS.III.2.11	DS	DI	Preparing Bachelor Thesis								25		2 sapt * 25 ore/sapt = 50 ore ¹			C	3	50		50		
Discipline optionale																							
8.	FMI.CS.III.1.04.1	DS	DO	Web Application Development	69																		
9.	FMI.CS.III.1.04.2	DS	DO	Image Processing		2		2		C	5									56	28	28	
10.	FMI.CS.III.1.04.3	DS	DO	UNIX Operating Systems																			
11.	FMI.CS.III.1.05.1	DS	DO	Software Engineering																			
12.	FMI.CS.III.1.05.2	DS	DO	Algorithms Design and Analysis	69	2		2		C	5									56	28	28	
13.	FMI.CS.III.1.06.1	DS	DO	Distributed Computing																			
14.	FMI.CS.III.1.06.2	DS	DO	Actuarial Algorithms	69	2		2		C	5									56	28	28	
15.	FMI.CS.III.1.06.3	DS	DO	Scientific Computing Algorithms (Pattern Recognition)																			
16.	FMI.CS.III.2.12.1	DS	DO	Design and Programming Environments																			
17.	FMI.CS.III.2.12.2	DS	DO	Software Security								52	2		2		Ex	4	48	24	24		
18.	FMI.CS.III.2.12.3	DS	DO	Statistical Software																			
19.	FMI.CS.III.2.13.1	DS	DO	Networks Administration																			
20.	FMI.CS.III. 2.13.2	DS	DO	Modelling and Simulation								64	1		2		C	4	36	12	24		
21.	FMI.CS.III. 2.13.3	DS	DO	Financial Algorithms																			
22.	FMI.CS.III. 2.14.1	DS	DO	Logical and functional programming																			
23.	FMI.CS.III. 2.14.2	DS	DO	Gaming development																			
24.	FMI.CS.III. 2.14.3	DS	DO	Blockchain								64	1		2		C	4	36	12	24		



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LEGENDA: *C1 = categoria formativă: DF – discipline fundamentale, DD – discipline în domeniu, DS – discipline de specialitate, DC – discipline complementare. **C2 = categoria opționalității: DI – discipline impuse, DO – discipline opționale, SI - Studiu Individual, C – curs, S – seminar, L – Laborator, P – Proiect, CR – Credite, FV – forma de verificare, Ex - Examen, C – Colocviu.

¹ Elaborarea lucrării de licență: 50 ore Aplicații în săptămânile 13 și 14, semestrul 6

Nr. crt.	Discipline facultative	Cod disciplină	Semestrul 1							Semestrul 2							Nr. de ore pe disciplină		
			SI	C	S	L	P	F.V.	CR	SI	C	S	L	P	F.V.	CR	Total	Curs	Aplicații
1.	Human-machine interfaces	FMI.CS.III.1.07	69	2	2			C	5								56	28	28
2.	Entrepreneurship in IT&C	FMI.CS.III.2.15								77	2	2			C	5	48	24	24
Total ore facultative/ Total număr credite									4/5	4/5							104	52	52

6. GENERAL BALANCE

according to the *optional* disciplines of the curriculum

Nr. crt.	Discipline	Nr. de ore			Total	
		An I	An II	An III	ore	%*
1	Imposed (DI)*	648	620	334	1602	78.92%
2	Electives/Optionals (DO)*	56	84	288	428	21.08%
TOTAL		704	704	622	2030	100%
3	Free chosen (DFac/DF)*	112	112	104	328	13.19%

*Cf. Standardelor specifice ARACIS



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7. GENERAL BALANCE

according to the *formative* category of the subjects in the curriculum

Nr. crt.	Discipline	Nr. de ore			Total	
		An I	An II	An III	ore	%*
1	Base disciplines (DF)	336	336	104	776	38.23%
2	In domain (DD)					
3	Specialty disciplines (DS) + Preparing Bachelor Thesis	116	242	518	876	43.15%
4	Complementary disciplines (DC)	252	126		378	18.62%
5	other disciplines (ex. DR, ... după caz, în funcție de precizările din standardele specifice ARACIS).					
TOTAL		704	704	622	2030	100%

*Pentru calculul procentelor se consideră bază de calcul fondul total de ore de activitate de 2030, incluzându-se în acest fond numărul minim de 120 ore de practică, fără a se adăuga și orele care depășesc această valoare. după caz, în funcție de precizările din standardele specifice ARACIS).



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Valabil încă

8. EXPLANATORY NOTES REGARDING THE PRACTICE

YEAR OF STUDY	CONTENTS
I	The specialized internship in the Computer Science curriculum in English is carried out within IT companies or the Faculty of N focuses on training the skills of writing documents and knowing the essential elements in writing an essay / report / project.
II	The internship in the Computer Science curriculum in English is carried out in IT companies or in the Faculty of Mathematics and Informatics and focuses on the training of skills for the development of a software application that solves a real problem.

9. WEEKLY STRUCTURE OF THE UNIVERSITY YEAR

Year of study	Educational activities				Exam sessions			Practice	Vacations		
	Sem. I		Sem. II		Winter	Summer	Backlogs		Winter	Spring	Summer
	weeks	hours/ week	weeks	hours/ week	weeks	weeks	weeks		weeks	weeks	weeks
I	14	23	14	23	3	3	2	60	2	1+1(Paște)	10
II	14	23	14	23	3	3	2	60	2	1+1(Paște)	10
III	14	22	12 + 2 (preparing bachelor thesis)	22	3	3	1	50 (preparing bachelor thesis)	2	1+1(Paște)	-

10. SPECIFIC CONDITIONS OF ACCESS / ADMISSION, PROMOTION / EQUIVALENCE OF THE YEAR OF STUDIES / SOME DISCIPLINES, TRANSFER ETC.



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11. CHOICE OF OPTIONAL DISCIPLINES BY STUDENTS. DIVISION CRITERIA

The selection of elective disciplines is made in the last weeks of the 2nd semester, for the next academic year, with the exception of students in the first year of study, who opt at the time of enrollment in the Admission Contest. Students complete a standard application that contains the list of disciplines in the offer for the electives in both semesters of the following academic year and submit, through the head of the year, to the faculty secretariat, the completed applications. The option that meets the maximum number of requests from students will run. If there are two or more disciplines with a maximum number of applications, the faculty council will decide which discipline will run.

12. THE STRUCTURE OF THE GRADUATION EXAM

The license exam consists of two tests, awarded with two marks:

- Mark 1 (N1) is awarded for the answers to two of the 10 questions from a list of topics (the list of topics is proposed by the co
by the evaluating commission from the list of topics.
- Mark 2 (N2) is awarded for the content and presentation of the thesis.

hosen

Each of the two marks, N1 and N2 must be at least 5. The final mark is $N_{final} = (N1 + N2) / 2$ and it must be at least 6.

10 credits are awarded for the license exam, 5 credits for each test. The student who earned 190 credits by promoting the three years of study and the license exam receives the Bachelor's degree. The student who passed the third year of study (obtained the 180 compulsory and optional credits from the curriculum), but does not endorse or promote the license exam, receives the certificate of graduation of a specialization (without the Bachelor's degree).

13. POSSIBILITIES OF CONTINUING STUDIES OR ACCESS TO OTHER FORMS OF PERSONAL AND PROFESSIONAL DEVELOPMENT

Graduates of this licence program may enroll in a master's program or pursue other postgraduate programs for professional and personal development in the same field.



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Bd. Mamaia nr. 124, 900527 Constanța, România - Tel./Fax: +4 0241 606.407, +4 0241 606.467
E-mail: rectorat@uniiv-ovidius.ro - Web page: www.uniiv-ovidius.ro

Universitatea „Ovidius” din Constanța
AVIZAT DSAMC/DACIS

Facultatea de Matematică și Informatică
Domeniul Fundamental: Matematică și științe ale naturii
Domeniul de licență: Informatică
Programul de studii: Informatică în limba engleză

Descrierea calificării
Competențe profesionale / Rezultatele învățării

C1. Programming in high languages

Knowledge

- R11 – Knows basic IT concepts, theories, models and methods and uses them appropriately in professional communication.
- R12 – Knows how to use technology to exemplify the notions learned.
- R13 – Knows how to adequately describe programming paradigms and specific language mechanisms, as well as identify the difference between semantic and syntactic aspects.
- R14 – Knows how to develop program units and to elaborate the afferent documentation.

Skills

- R15 – Can use basic knowledge to explain and interpret various types of concepts, situations, processes, projects, etc. associated with the IT field.

Responsibility and autonomy

- R16 – Can assume responsibility for managing the professional development of individuals and groups.
- R17 – Can manage and transform work or study situations that are complex, unpredictable and require new strategic approaches.

C2. Development and maintenance of software applications

Knowledge

- R11 – Knows how to apply appropriate assessment methods for the optimal selection of programming techniques and computational models used in problem solving.
- R12 – Knows how to operate with basic IT concepts.
- R13 - Knows how to identify appropriate software development methodologies.
- R14 - Knows how to identify and explain appropriate mechanisms for specifying software systems.
- R15 - Knows how to use methodologies, specification mechanisms and development environments to create IT applications.
- R16 - Knows how to use appropriate criteria and methods for evaluating computer applications.

Skills

- R17 – Can participate creatively and constructively in the development and maintenance of digital content.

Responsibility and autonomy

- R18 - Relates in a team: is able to communicate interpersonally, respects the rules of conduct and ethical obligations of the



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Ri9 – Can take responsibility for contributing to professional knowledge and practice and / or for reviewing the strategic performance of teams.

C3. Use of IT tools in an interdisciplinary context

Knowledge

Ri1 - Knows the concepts, theories and models used in the field of application.

Ri2 - Knows how to identify and explain basic computer models appropriate to the field of application.

Ri3 - Knows distributed computing and parallel computing algorithms and can apply them in the design and implementation of distributed systems.

Ri4 – Knows how to use computer and mathematical models and tools to solve application-specific problems.

Ri5 – Knows how to analyze the data and models created.

Ri6 - Knows how to develop IT components of interdisciplinary projects.

Skills

Ri7 – Can apply the appropriate methodologies for the development of software systems to solve practical problems.

Ri8 – Can develop a project using languages and software modeling tools.

Responsibility and autonomy

Ri9 – Communicates through consultation and cooperation with colleagues and specialists in other fields.

Ri10 – Develops specialized skills in research and / or innovation, for the acquisition of new knowledge and their systematic updating, taking into account the rapid evolution of the IT field.

C4. Use of theoretical foundations of computer science and formal models

Knowledge

Ri1 - Knows how to define the basic concepts and principles of computer science, as well as mathematical theories and models.

Ri2 – Knows how to interpret mathematical and computer (formal) models.

Ri3 – Knows how to identify appropriate models and methods for solving real problems.

Ri4 – Knows how to use simulation to study the behavior of models and evaluate performance.

Ri5– Knows how to incorporate formal models into specific applications in various fields.

Skills

Ri6 - Can perform various formal calculation models.

Responsibility and autonomy

Ri7 – Can manage and transform work or study situations that are complex, unpredictable and require new strategic approaches, establishing interdisciplinary connections.

Ri8 – Is able to integrate knowledge from different fields. also using consultation and cooperation with specialists from other fields.

C5. Database design and management

Knowledge

Ri1 - Knows how to identify the basic concepts for organizing



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R12 – Knows how to identify and explain basic models for organizing and managing data in databases.

R13 – Knows how to use methodologies and database design environments for particular problems.

R14 – Knows how to evaluate the quality of different database management systems in terms of structure, functionality and extensibility.

Skills

R15 – Can develop database projects.

Responsibility and autonomy

R16 – Is able to design creative solutions to practical IT problems.

R17 – Is able to manage complex IT activities or projects by taking responsibility for making decisions in unpredictable work or study situations.

C6. Design and administration of computer networks

Knowledge

R11 – Knows how to identify basic concepts and models for computer systems and computer networks.

R12 – Knows how to identify and explain the basic architectures for organizing and managing computer systems and networks.

R13 – Knows how to use the techniques for installing, configuring and managing systems and networks.

R14 – Knows how to perform performance measurements for response times, resource consumption; establishing access rights.

Skills

R15 – Can perform computer network projects.

Responsibility and autonomy

R16 – Can take responsibility for work or study tasks.

R17 – Is able to self-assess the need for training and career development, to develop acquired skills and to adapt to the requirements of a dynamic and globalized society.

C7. Using the concepts and techniques of artificial intelligence to solve real world problems.

Knowledge

R11 - Knows how to identify the basics, methods and techniques of artificial intelligence to solve concrete problems.

R12 - Knows how to interpret the results obtained.

Skills

R13 - Is able to deepen the notions learned.

R14 - Is able to collect, analyze and interpret the data needed for a chosen research topic.

Responsibility and autonomy

R15 - Interacts in a team: is able to communicate interpe

R16 - Performs on time, rigorously, efficiently and resy
high degree of complexity, in conditions of decisic
observance of professional ethics.



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Rî7 - Is able to self-assess the need for training and career development, to develop the skills acquired and to adapt to the requirements of a dynamic and globalized society.

Rî8 – Presents openness to the innovative tendencies in the specialized field, by the