COURSE DESCRIPTION

Internship in Computer Science (Practica de specialitate in informatica)

Academic year 2026-2027

1. Programme-related data

1.1. Higher Education Institution	Babeş-Bolyai University
1.2. Faculty	Mathematics and Computer Science
1.3. Department	Mathematics
1.4. Field	Mathematics
1.5. Level of study	Bachelor
1.6. Degree programme / Qualification	**Mathematics and Computer Science (in English)**
1.7. Form of education	**Full-time**

2. Course-related data

2.1. Course title	Internship in Computer Science (Practica de specialitate in informatica)			Course code	MLE2032
2.2. Course coordinator	Assoc. Prof. Teodora Catinas				
2.3. Seminar coordinator	Assoc. Prof. Teodora Catinas				
2.4. Year of study: 3	2.5. Semester: 5		2.6. Type of assessment	Viva voce	
2.7. Course status	Optional		2.8. Course type	Specialisation subject	

3. Total estimated time (hours per semester of teaching activities)

3.1. Number of hours per week	**1**	of which: 3.2. course	**0**	3.3. seminar/ laboratory/ project	**1**
3.4. Total of hours in the curriculum	14	of which: 3.5. course	0	3.6. seminar/ laboratory	**14**
Time allocation for individual study (IS) and self-taught activities (ST)					**hours**
Learning from textbooks, course materials, bibliography, and notes (IS)					20
Additional research in the library, on subject-specific electronic platforms, and on-site					20
Preparing seminars/ laboratories/ projects, assignments, reports, portfolios, and essays (greater than or equal to the total number of hours specified in the course calendar for evaluation tasks)					30
Tutoring (professional guidance)					12
Examinations					4
Other activities [i.e.: two-way communication with the course coordinator/tutor]					
3.7. Total hours of individual study (IS) and self-taught activities (ST)					86
3.8. Total hours per semester					100
3.9. Number of credits					4

4. Prerequisites (where applicable)

4.1. curriculum-related	• knowledge of main mathematical notions and procedures and ability to work with them. • Ability to work with mathematical concepts
4.2 skills-related	• ability to solve problems

5. Specific conditions (where applicable)

5.1. course-related	
5.2. seminar/laboratory-related	

6.1. Competencies resulting from the completion of the degree programme *(as referred to in the curriculum)*[1]

Professional competencies	
Competency code	**Competency**
CP1	dezvolta strategii de soluționare a problemelor *develop problem-solving strategies*
CP4	dezvolta software cu sursa deschisa *develop open source software*
CP5	sintetizează informații *synthesize information*
CP7	comunică informații matematice *communicate mathematical information*
CP8	studiază relații între cantități *study relationships between quantities*
CP9	utilizează tehnici de prelucrare a datelor *use data processing techniques*
CP11	realizează analize de date perform data analysis
Transversal competencies	
Competency code	**Competency**
CT1	Interpretează informații matematice *Interpret mathematical information*
CT2	Utilizează dispozitivele și aplicațiile digitale *Use digital devices and applications*
CT4	Soluționează probleme *Solve problems*
CT5	Gândește analitic *Think analitically*

6.2. Learning outcomes relevant to the degree programme (as referred to in the curriculum)[2]

Learning outcomes targeted by the subject		
Competency code	**Knowledge and comprehension**	**Specific academic skills**
CP5 **CP8**	9. Studentul/absolventul definește conceptele din disciplinele de bază de informatică și/sau matematici aplicate. *9. The student/graduate defines the concepts from basic computer science and/or applied mathematics disciplines.*	9. Studentul/absolventul identifică și aplică tehnicile adecvate pentru rezolvarea exercițiilor și problemelor din disciplinele majore ale matematicii. *9. The student/graduate identifies and applies suitable techniques to solve exercises and problems from the major disciplines of mathematics..*

[1] The professional and/or transversal skills targeted by the subject for which the course description is prepared will be copied from the curriculum of the degree programme. For each competency, the complete entry, including the competency code, will be copied with the exact wording that appears in the curriculum, without any changes. If no competency is copied from either of the two categories, the row corresponding to that category is deleted from the table.

[2] The learning outcomes relevant for the degree programme and targeted by the subject for which the course description is prepared will be listed. The entries, copied without any changes from the Curriculum by subject type (Core Subject/Specialisation Subject/Complementary Subject), are listed under the corresponding competency.

CP9 **CP11**	11. Studentul/absolventul formulează observații și diferențiază noțiuni, proprietăți și asertiuni din disciplinele de bază de informatică și/sau matematici aplicate prin exemple și contraexemple. *11. The student/graduate formulates observations and differentiates notions, properties, and assertions from the basic computer science and/or applied mathematics disciplines through examples and counterexamples.*	11. Studentul/absolventul descrie probleme din lumea reală în termeni matematici, identifică ipotezele de lucru, construiește modele matematice adecvate și explică limitările modelelor astfel obținute. *11. The student/graduate describes real-world problems in mathematical terms, identifies the working hypotheses, constructs suitable mathematical models, and explains the limitations of the resulting models.*

7. Subject-specific learning outcomes (referred to by each subject coordinator across the range of competencies and learning outcomes at the level of the degree programme)

Knowledge and comprehension
1 The student knows: - fundamental notions of Computer Science and knows how to apply them for accomplishing the asignments - main Computer Science procedures and has the ability to work with them.
Specific academic skills
1. The student is able to: - to work with Computer Science concepts - solve problems applying mathematical and Computer Science concepts - present the results in writing and in oral presentations
2. The student has the ability to work independently to obtain - extended results for some others areas of Mathematics or Computer Science - algorithms that can be applied in practical problems from real life.

8. Content

8.2 Seminary/Laboratory	**Teaching and learning methods**	Remarks
1. Accustom with the institution were the student is accepted for internship (schools, libraries, banks, companies, etc.) Documentation regarding the specific activities/rules of the institution/company.	Exposure, description, explanation	
2. Theme presentation (problem statement) to be solved and establish team roles.	Dialog lecture, discussions, team debate	
3. Establish the project objectives and deadlines. 4.	Exposure, description, explanation	
5. Project analysis: entities and relations identification, use scenarios, data flow diagrams.	Dialog lecture, discussions, team debate	
6. Development of the detailed specifications of the project.	Dialog lecture, discussions, team debate	
7. Development of practical applications of theoretical models.	Dialog lecture, discussions, team debate	
8. Implementation and accomplishment of projects; cooperation within projects.	Dialog lecture, discussions, team debate	
9. Design: conceptual data model, logical data model, computation design, physical data model, user interface, application architecture	Dialog lecture, discussions, team debate, questioning, discovery	

10. Implementation of a required product or teaching activity based on some given documentation.	Dialog lecture, discussions, team debate	
11. Gaining abilities to execute a product/program in teams under the supervision of a specialize internship tutor and academic staff.	Dialog lecture, discussions, team debate	
12. Study of some problems and analysis of different ways of solving them.	Dialog lecture, discussions, team debate	
13. Teaching activities: training, tutorials, tests, evaluations, etc. Applications of knowledges of teaching and didactical methods specific to the specialization.	Dialog lecture, discussions, team debate	
14. Integration Testing; documentations for development stages.	Dialog lecture, discussions, team debate	
15. Project presentation in front of the evaluators	Evaluation	

Bibliography

] M. FRENTIU, I. LAZAR, Bazele Programării: Proiectarea Algoritmilor, 2000, Ed. Univ. Petru Maior, Tg.Mureş
[2] M. FRENTIU, I. LAZAR, S. MOTOGNA, V. PREJMEREAN, Elaborarea algoritmilor, Ed. Presa Universitara, Clujeana, Cluj-Napoca, 1998
[3]. B. PARV, Analiza si proiectarea sistemelor,Universitatea Babes-Bolyai, Centrul de Formare Continua si Învatamânt la Distanta, Facultatea de Matematica si Informatica, Cluj-Napoca, ed. a III-a, 2003.
[4] L. TAMBULEA, Baze de date, Litografiat Cluj-Napoca, 2001.

9. Evaluation

Type of activity	9.1 Evaluation criteria[3]	9.2 Evaluation methods[4]	9.3 Percentage in the final grade
9.4. Course			
9.5. Seminar/ laboratory	The institution tutor assesses the performance of the interns. The faculty mentor assesses the activities (based on Activity Report)	Evaluation and continuous observations during the internship	100%
9.6 Minimum standard for passing			
• At least grade 5			

10. SDG labels (Sustainable Development Goals)[5]

		Sustainable Development Generic Label

[3] The evaluation criteria must directly reflect the learning outcomes targeted at the level of the degree programme respectively at the level of the subject. More specifically, the learning outcomes set out in the expected learning outcomes are assessed.

[4] Both final evaluation methods and ongoing evaluation strategies should be established.

[5] Select a single label which, according to the *Implementation of SDG labels in the academic process*, best matches the subject. If the subject addresses sustainable development in a generic manner (i.e. by presenting/introducing the general framework of sustainable development, etc.), then the Sustainable Development generic label may be applied. If none of the labels describe the subject, select the last option: *"No label applies."*

								
○	○	○	○	○	○	○	○	x
								No label applies
○	○	○	○	○	○	○	○	○

Date:
17.04.2026

Signature of course coordinator

Conf. Dr. Teodora Cătinaș

Signature of seminar coordinator

Conf. Dr. Teodora Cătinaș

Date of approval:
25.05.2026

Signature of the head of department

Prof. dr. Andrei Mărcuș