SYLLABUS

Bachelor Thesis Elaboration

University year 2025-2026

1. Information regarding the programme

1.1. Higher education institution	Babeş-Bolyai University
1.2. Faculty	Mathematics and Computer Science
1.3. Department	Mathematics
1.4. Field of study	Mathematics
1.5. Study cycle	Bachelor
1.6. Study programme/Qualification	Mathematics and Computer Science
1.7. Form of education	Full time

2. Information regarding the discipline

2.1. Name of the dis	cipli	e Bachelor Thesis Elaboration				Discipline code	MLE0098	
2.2. Course coordinator				Lect. dr. Grad Anca				
2.3. Seminar coordinator					Lect. dr. Grad Anca			
2.4. Year of study 3 2.5. Semester 3 2.6. Type of evaluat				on	E	2.7. Discipline regime	Compulsory	

3. Total estimated time (hours/semester of didactic activities)

3.1. Hours per week	1	of which: 3.2 course	0	3.3 seminar/laboratory	1	
3.4. Total hours in the curriculum	12	of which: 3.5 course	0	3.6 seminar/laborator	12	
Time allotment for individual study (ID) and self-study activities (SA)						
Learning using manual, course support,	bibliograp	hy, course notes (SA)			12	
Additional documentation (in libraries, on electronic platforms, field documentation)						
Preparation for seminars/labs, homework, papers, portfolios and essays						
Tutorship						
Evaluations						
Other activities:						
3.7. Total individual study hours63						
3.8. Total hours per semester75						
3.9. Number of ECTS credits 5						

4. Prerequisites (if necessary)

4.1. curriculum	
4.2. competencies	

5. Conditions (if necessary)

5.1. for the course	
5.2. for the seminar /lab activities	
6.1. Specific competencies ecquire	d 1

6.1. Specific competencies acquired

¹ One can choose either competences or learning outcomes, or both. If only one option is chosen, the row related to the other option will be deleted, and the kept one will be numbered 6.

Professional/essential competencies	 Ability of understanding large bibliography items connected to a particular notion and results concerning it Synthetization capabilities Critical thinking in making comparisons and generalization Development of novel ideas supported by correct mathematical proof Modelling both a theoretical and a practical problems. Identifying appropriate solutions for the specific problem and developing original responses
ersal encies	• application of organized and efficient work rules, of responsible attitudes towards the didactic-scientific field, to bring creative value to own potential, with respect for professional ethics principles and norms
Transve compete	• use of efficient methods and techniques to learn, inform, research and develop the abilities to bring value to knowledge, to adapt at the requirements of a dynamical society and to communicate efficiently in Romanian language and in an international language

6.2. Learning outcomes

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Knowledge	 The student knows: The graduate has the ability to develop, design and create new applications, systems or products using best practices of the field. The graduate has knowledge related to programming, mathematics, engineering and technology and has the skills to use them to create complex information technology systems. The graduate has adequate knowledge related to the use of integrated development environments for creating large complex applications.
Skills	 The student is able to: The graduate has the necessary skills for computer program design and software systems analysis. The graduate is able to apply architectural styles, design patterns and best practices in the field to design software applications of high complexity. The graduate has the ability to choose and use existing modules and environments for application development.
Responsibility and autonomy:	 The student has the ability to work independently to obtain The graduate has the necessary knowledge for literature review. The graduate is able to write a scientific/technical report. The graduate has the ability to observe and obtain information from various sources.

7. Objectives of the discipline (outcome of the acquired competencies)

7.1 General objective of the discipline	• The course represents the individual work the student performs with the purpose to prepare the Bachelor's Degree thesis on a given topic.
7.2 Specific objective of the discipline	 At the completion of this course, the student should: have documentation abilities on an established topic be able to design the table of contents of a thesis know how to write a technical document (research paper) in many iterations know how to conduct a small size research project, use research methodologies

8.1 Cou	ırse	Teaching methods	Remarks			
Bibliog	raphy					
8.2 Ser	ninar / laboratory	Teaching methods	Remarks			
1.Class mather Coordin subject	ical structure of a Bachelor Thesis in natics and computer science. nator election and choice of research . Writing in Latex of MathType.	Presentation, debate, case study	Assignment 1: final choice of coordinator and of research subject			
2. Docu Structu referen	mentation techniques. Academic ethics. re of the bachelor thesis and choice of ces.	Presentation, debate, case study	Assignment 2: establishing the main references			
3. The o main th	design of the chapter containing the neoretic results	Presentation, debate, case study	Assignment 3: Chapter 2 of the bachelor thesis			
4. The design of the chapter containing the main applications		Presentation, debate, case study	Assignment 4: Chapter 3 of the bachelor thesis			
5. Presentation techniques		Presentation, debate, case study	Assignment 5: Chapter 1 of the bachelor thesis			
7. Final review of the bachelor thesis. Anti- plagiarism software.		Presentation, debate, case study	Assignment 6: Final version of bachelor thesis and the anti- plagiarism report			
Bibliog 1.	raphy Eco Umberto: <i>Cum se face o teză de licen</i>	<i>tă,</i> Polirom, 2020				
2.	Vivaldi Franco: Mathematical writing, Sp	ringer (undergraduate Mathematics	Series), 2014			
3. ₄	3. Manchester Academic Phrasebank <u>https://www.phrasebank.manchester.ac.uk/</u>					
4. 5	4. Academic writing: <u>https://www.eapfoundation.com/writing/what/ä</u>					
э.	5. Siegi ieu Nijssen: Wi unig a Bachelor Thesis in Computer Science,					
6	Wiese Andreas: How to write a hachelor	/master thesis				
0.	https://www.math.cit.tum.de/fileadmin/	waaca math /nersonen /discrete ma	ith/Andreas Wiese/writina-			
	thesis ndf		any man cus_wiese/ withing_			
7.	7. Hardt Wolfram: <i>Guideline for Writing Bachelor thesis</i> . TU Chemnitz, Germany https://www.tu-					

chemnitz.de/informatik/ce/files/Guidelines-Bachelor-Thesis.pdf

9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

• The course respects the IEEE and ACM Curricula Recommendations for Software Engineering studies.

• The course exists at the major universities in Romania offering similar study programs;

10. Evaluation

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of final grade		
104 Course					
10.4 Course					
10.5 Seminar/laboratory	The grade given by the lecturer	Evaluation of assignments	50%		
	The grade given by the scientific coordinator	Evaluation of the scientific content of the thesis	50%		
10.6 Minimum standard of performance					
• Grade 5					

11. Labels ODD (Sustainable Development Goals)²

General label for Sustainable Development									
							9 INDUSTRY, INNOVATION AND INFRASTRUCTURE		

Date: 11.04.2025 Signature of course coordinator

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Signature of seminar coordinator

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Date of approval: 25.04.2025

Signature of the head of department

Prof. dr. Andrei Mărcuș

² Keep only the labels that, according to the *Procedure for applying ODD labels in the academic process*, suit the discipline and delete the others, including the general one for *Sustainable Development* – if not applicable. If no label describes the discipline, delete them all and write *"Not applicable."*.