

COURSE DESCRIPTION

Work for Dissertation Project

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	Master
1.6. Degree programme / Qualification	Advanced Mathematics
1.7. Form of education	Full time

2. Course-related data

2.1. Course title	Work for Dissertation Project			Course code	MME3042
2.2. Course coordinator	Prof. dr. Andrei Mărcuş				
2.3. Seminar coordinator	Prof. dr. Andrei Mărcuş				
2.4. Year of study	2	2.5. Semester	4	2.6. Type of assessment	Viva voce
2.7. Course status	Compulsory			2.8. Course type	Specialisation subject

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

3.1. Number of hours per week	5	of which: 3.2. course	-	3.3. seminar/ laboratory/ project	5
3.4. Total of hours in the curriculum	60	of which: 3.5. course	-	3.6. seminar/ laboratory	60
Time allocation for individual study (IS) and self-taught activities (ST)					hours
Learning from textbooks, course materials, bibliography, and notes (IS)					30
Additional research in the library, on subject-specific electronic platforms, and on-site					90
Preparing seminars/ laboratories/ projects, assignments, reports, portfolios, and essays					-
Tutoring (professional guidance)					-
Examinations					-
Other activities					20
3.7. Total hours of individual study (IS) and self-taught activities (ST)				140	
3.8. Total hours per semester				200	
3.9. Number of credits				8	

4. Prerequisites (where applicable)

4.1. curriculum-related	
4.2. skills-related	

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
CP2	demonstrate disciplinary expertise
CP5	apply the principles of ethics and scientific integrity in research activities
CP6	disseminate results among the scientific community
Transversal competencies	
Competency code	Competency
CT1	interpret mathematical information
CT3	work independently

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
CP2, CT1	1. The graduate analyzes the hypotheses and conclusions from mathematical assertions and links them within the demonstration.	1. The graduate demonstrates the acquisition and use of effective research methods and techniques.
CP5	4. The graduate critically studies the specialized literature, including by using international databases, identifying fundamental concepts.	4. The graduate applies appropriate techniques for solving advanced problems.
CP6	2. The graduate defines the basic concepts from advanced mathematics disciplines in the curriculum.	2. The graduate correctly and rigorously formulates the statements of mathematical assertions (lemmas, propositions, theorems) from the disciplines in the curriculum.
CT3	3. The graduate compares and distinguishes related notions and their properties from advanced mathematics disciplines in the curriculum.	3. The graduate is able to identify and formulate significant problems which form the basis for further research.

7. Subject-specific learning outcomes

Knowledge and comprehension
1. The graduate has the necessary knowledge to study specialized literature.
2. The graduate knows fundamental mathematical concepts as well as methods for applying them in fields of science related to mathematics and computer science.
Specific academic skills
1. The graduate is able to construct clear and well-supported mathematical arguments to explain mathematical problems, topics, and ideas in writing.

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.

2. The graduate is able to construct clear and well-supported mathematical arguments to explain mathematical problems, topics, and ideas in writing.

8. Contents



















8.1. Course	Teaching and learning methods	Remarks ³
8.2. Seminar/ laboratory	Teaching and learning methods	Remarks
1. Classical structure of a Master Thesis in mathematics and computer science. Coordinator election and choice of research subject. Writing in Latex of MathType.	Presentation, debate, case study	Assignment 1: final choice of coordinator and of research subject
2. Documentation techniques. Academic ethics. Structure of the Master thesis and choice of references.	Presentation, debate, case study	Assignment 2: establishing the main references
3. The design of the chapter containing the main theoretic results	Presentation, debate, case study	Assignment 3: Chapter 2 of the Master thesis
4. The design of the chapter containing the main applications	Presentation, debate, case study	Assignment 4: Chapter 3 of the Master thesis
5. Presentation techniques	Presentation, debate, case study	Assignment 5: Chapter 1 of the Master thesis
6. Final review of the Master thesis. Anti-plagiarism software.	Presentation, debate, case study	Assignment 6: Final version of Master thesis and the anti-plagiarism report
Bibliography <ol style="list-style-type: none"> Eco, Umberto: <i>Cum se face o teză de disertație</i>. Polirom, 2020 Vivaldi, Franco: <i>Mathematical writing</i>, Springer (undergraduate Mathematics Series), 2014 Manchester Academic Phrasebank https://www.phrasebank.manchester.ac.uk/ Academic writing: https://www.eapfoundation.com/writing/what/ Wiese, Andreas: <i>How to write a bachelor/master thesis</i>, https://www.math.cit.tum.de/fileadmin/w00ccg/math/personen/discrete_math/Andreas_Wiese/writing-thesis.pdf 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. Evaluation

Activity type	9.1 Evaluation criteria	9.2 Evaluation methods	9.3 Percentage of final grade
9.4 Course			
9.5 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%
9.6 Minimum standard of performance			
<ul style="list-style-type: none"> Grade 5 			

³ For example, organisational aspects, recommendations for students, specific aspects relating to the course/seminar, such as inviting experts in the field, etc.

10. SDG labels (Sustainable Development Goals)⁴

	<input type="radio"/>	Sustainable Development Generic Label							
1 FĂRĂ SĂRĂCIE 	2 FOAMETE 'ZERO' 	3 SĂNĂTATE ȘI BUNĂSTĂRE 	4 EDUCĂȚIE DE CALITATE 	5 EGALITATE DE GEN 	6 APĂ CURĂȚĂ ȘI SĂNĂTATE 	7 ENERGIE CURĂȚĂ ȘI LA PREȚURI ACCESIBILE 	8 MUNCĂ DECENTĂ ȘI CREȘTERE ECONOMICĂ 	9 INDUSTRIE, INOVAȚIE ȘI INFRASTRUCTURĂ 	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	X
10 INEGALITĂȚI REDUSE 	11 ORĂȘE ȘI COMUNITĂȚI DURABILE 	12 CONSUM ȘI PRODUCȚIE RESPONSABILĂ 	13 ACȚIUNE CLIMATICĂ 	14 VIAȚĂ ACVATICĂ 	15 VIAȚĂ TERESTRĂ 	16 PACE, JUSTIȚIE ȘI INSTITUȚII EFICIENTE 	17 PARTENERIATE PENTRU REALIZAREA OBIECTIVELOR 	No label applies	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Date of entry:
11.04.2025

Signature of course coordinator

Prof. dr. Andrei Mărcuș

Signature of seminar coordinator

Prof. dr. Andrei Mărcuș

Date of approval in the department:
25.04.2025

Signature of the head of department

Prof. dr. Andrei Mărcuș

⁴ 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."