SYLLABUS

1. Information regarding the programme

1.1 Higher education institution	„Babeş-Bolyai" University Cluj-Napoca
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

2. Information regarding the discipline

2.1 Name of the discipline (en) (ro)			Internship in Mathematics (Practica de specialitate in matematica)				
2.2 Course coordinator			Conf. Univ. dr. Teodora Cătinaș				
2.3 Seminar coordinator			Conf. Univ. dr. Teodora Cătinaș				
2.4. Year of study	3	2.5 Semester	5	2.6. Type of evaluation	C	2.7 Type of discipline	Optional
2.8 Code of the discipline		MLE2031					

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	14	Of which: 3.5 course	0	3.6 seminar/laboratory	14
Time allotment:					hours
Learning using manual, course support, bibliography, course notes					20
Additional documentation (in libraries, on electronic platforms, field documentation)					20
Preparation for seminars/labs, homework, papers, portfolios and essays					30
Tutorship					12
Evaluations					4
Other activities:					

3.7 Total individual study hours	86
3.8 Total hours per semester	100
3.9 Number of ECTS credits	4

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. Specific competencies acquired

Professional competencies	• C1.1: Identifications of notions, descriptions of theories and use of the specific language • C 2.1 Identification of appropiate methodologies for software development • C2.3 Use of methodologies, specification mechanism and development frameworks for developing software applications • C2.5 Development of dedicated software projects • C5.3: Construction and development of logic proofs for some mathematical results, with identification of hypotesis and conclusions
Transversal competencies	• CT1 Application of efficient and organized work rules, of responsible attitudes towards the didactic-scientific domain, to creatively value one's own potential, with the respect towards the principles and norms of professional etic. • CT2 Efficient progress of group activities and development of communications skills and collaboration • CT3 Use of efficient methods and techniques to learn, inform, research and develop the abilities to value the knowledge, to adapt to requirements of a dynamic society and to communicate in Romanian language and in a language of international circulation.

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

7.1 General objective of the discipline	• Abilities of applying theoretical knowledge gained during the studies. • Gaining abilities to execute a product/program in teams, writing project documentation, under the supervision of a specialize internship tutor and academic staff.
7.2 Specific objective of the discipline	• Ability of application of some mathematical concepts • Ability of oral and writing comunication of ideas and mathematical concepts • Ability of solving specific problems from algebra, mathematical analysis, geometry • Execute a product/program in teamwork • Write necessary documentations • Public project presentation

8. Content

8.1 Course	Teaching methods	Remarks
Bibliography		
8.2 Seminar / laboratory	Teaching 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.	Exposure, description, explanation	
4. Project analysis: entities and relations identification, use scenarios, data flow diagrams.	Dialog lecture, discussions, team debate	
5. Development of the detailed specifications of the project.	Dialog lecture, discussions, team debate	
6. Development of practical applications of theoretical models.	Dialog lecture, discussions, team debate	
7. Implementation and accomplishment of projects; cooperation within projects.	Dialog lecture, discussions, team debate	
8. Design: conceptual data model, logical data model, computation design, physical data model, user interface, application architecture	Dialog lecture, discussions, team debate, questioning, discovery	
9. Implementation of a required product or teaching activity based on some given documentation.	Dialog lecture, discussions, team debate	
10. 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	
11. Study of some problems and analysis of different ways of solving them.	Dialog lecture, discussions, team debate	
12. Teaching activities: training, tutorials, tests, evaluations, etc. Applications of knowledges of teaching and didactical methods specific to the specialization.	Dialog lecture, discussions, team debate	
13. Integration Testing; documentations for development stages.	Dialog lecture, discussions, team debate	
14. Project presentation in front of the evaluators	Evaluation	

Bibliography

[1] D. ANDRICA, D. I. DUCA, I. PURDEA, I. POP: Matematica de bază, Editura Studium, Cluj-Napoca,

2005
[2] Ş. COBZAŞ: Analiză matematică (Calcul diferenţial), Presa Universitară Clujeană, Cluj-Napoca, 1997.
[3] D. I. DUCA, E. DUCA: Exerciţii şi probleme de analiză matematică (vol. 1 şi 2), Casa Cărţii de Stiinţă, Cluj-Napoca, 2009.
[4] G. M. FIHTENHOLŢ, Curs de calcul diferenţial şi integral (vol.I şi II), Editura Tehnică, Bucureşti, 1963, 1965.
[5] C. NĂSTĂSESCU, C. NIŢĂ, M. BRANDIBURU, D. JOIŢA: Exerciţii şi probleme de algebră pentru clasele IX – XII, Editura Didactică şi Pedagogică Bucureşti.
[6]. 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.
[7] I. STAMATE, I. CRIŞAN: Culegere de probleme de algebră şi analiză matematică pentru licee, Editura Didactică şi Pedagogică, Bucureşti, 1969.
[8] I. STAMATE, I. STOIAN: Culegere de exerciţii şi probleme de algebră pentru licee, Editura Didactică şi Pedagogică, Bucureşti, 1979.

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;
- The course offers an overall perspective of Mathematics and Computer Science domains, and a general expertise for the student;
- The course offers basic knowledge about teamwork and integration in work market.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Course			
10.5 Seminar/lab activities		The institution tutor assesses the performance of the interns.	100%
10.6 Minimum performance standards			
At least grade 5 (from a scale of 1 to 10)			

Date	Signature of course coordinator	Signature of seminar coordinator
19.04.2023		Conf. Dr. Teodora Cătinaș

Date of approval	Signature of the head of department
.....	Prof. Dr. Andrei Mărcuş