SYLLABUS

Babeş-Bolyai University, Cluj-Napoca
Mathematics and Computer Science
Mathematics
Mathematics
Licence
Mathematics and Computer Science

1. Information regarding the programme

2. Information regarding the discipline

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2.1 Name of the		Basic Mat	hema	atics			
discipline							
2.2 Course coordinato	r						
2.3 Seminar coordinator			Tı	rif Tiberiu-Vasile			
2.4 Year of study 1	2.5	5 Semester	1	2.6. Type of	C	2.7 Type of	facultative
				evaluation		discipline	
2.8 Code of the		MLR001	8				
discipline							

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

3.1 Hours per week	3	Of which: 3.2 course	2	3.3 seminar/laboratory	1
3.4 Total hours in the curriculum	42	Of which: 3.5 course	28	3.6	14
				seminar/laboratory	
Time allotment:					hours
Learning using manual, course suppor	t, bibl	iography, course note	S		10
Additional documentation (in libraries, on electronic platforms, field documentation)					10
Preparation for seminars/labs, homework, papers, portfolios and essays					27
Tutorship					
Evaluation					
Other activities:					
3.7 Total individual study hours		47			

3.8 Total hours per semester	75
3.9 Number of ECTS credits	3

4. Prerequisites (if necessary)

	,	
4.1 curriculum	Calculus at the level of technological high schools	
4.2 competencies	Mathematical thinking abilities	

5. Conditions (if necessary)

5.1 For the course	•
5.2 For the seminar/lab	•
activities	

6. Specific competencies aquired

Professional competencies	•	C1.4 Recognizing the main classes /types of mathematical problems and selecting the appropriate methods and techniques for their solvingC2.1 Identifying the basic notions used to describe some processes and phenomena
Transversal competencies	•	CT1 Application of efficient and rigorous working rules, manifest responsible attitudes towards the scientific and didactic fields, respecting the professional and ethical principles.

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

7.1 General objective of the discipline	• Knowledge of the basic notions and techniques of mathematical analysis
7.2 Specific objectives of the discipline	 Presentation of techniques for solving problems related to sequences of real numbers Presentation of techniques for solving problems related to limits of functions
	 Presentation of techniques for solving problems related to the study of real valued functions of a real variable Presentation of techniques for calculating undefined and defined integrals

8. Content

8.1 Course	Teaching methods	Remarks
1+2. Classical sequences of real numbers	Lecture, discussion,	
	problematisation	
1+2. Classical sequences of real numbers	Lecture, discussion,	
	problematisation	
3+4. Limits of sequences	Lecture, discussion,	
	problematisation	
5+6. Limits of functions	Lecture, discussion,	
	problematisation	
7. Continuous functions	Lecture, discussion,	
	problematisation	
8+9+10. Study of real valued functions of a real variable, mean	Lecture, discussion,	
value theorems, applications	problematisation	
11+12. Primitives	Lecture, discussion,	
	problematisation	
13+14. Riemann integrals and applications	Lecture, discussion,	
	problematisation	

Bibliography

- 1. DUCA D. I., DUCA E.: Exercitii si probleme de analiza matematica. Vol. I si II . Casa Cart ii de Stiinta, Cluj-Napoca, 2009
- 2. SIRETCHI GH.: Calcul diferential si integral. Vol 2.Exercitii. Editura Stiintifica si Enciclopedica, Bucuresti, 1985

8.2 Seminar / laboratory	Teaching methods	Remarks
1+2. Classical sequences of real numbers	Lecture, discussion,	
	problematisation	

3+4. Limits of sequences	Lecture, discussion, problematisation
5+6. Limits of functions	Lecture, discussion, problematisation
7. Continuous functions	Lecture, discussion, problematisation
8+9+10. Study of real valued functions of a real variable, mean value theorems, applications	Lecture, discussion, problematisation
11+12. Primitives	Lecture, discussion, problematisation
13+14. Riemann integrals and applications	Lecture, discussion, problematisation

Bibliography

- 1. DUCA D. I., DUCA E.: Exercitii si probleme de analiza matematica. Vol. I si II . Casa Cart ii de Stiinta, Cluj-Napoca, 2009
- 2. SIRETCHI GH.: Calcul diferential si integral. Vol 2.Exercitii. Editura Stiintifica si Enciclopedica, Bucuresti, 1985

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

The aim of the discipline is to bring the graduates of the technological high schools and those of the specialization "Sciences of Nature" to the level of a graduate of the specialization "Mathematics-informatics" in terms of preparation for the discipline "Mathematical analysis".

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in		
			grade		
10.4 Course					
10.5 Seminar/lab	Knowledge of basic techniques for	Written exam at the end of			
	solving problems in Calculus	the semester	100%		
10.6 Minimum performance standards 5					

 Date
 Signature of course coordinator
 Signature of seminar coordinator

 28.4.2022

 Date of approval
 Signature of the head of departament

