

SYLLABUS

1. Information regarding the programme

1.1 Higher education institution	Babes-Bolyai University Cluj-Nspoca
1.2 Faculty	Faculty of Mathematics and Informatics
1.3 Department	Mathematics
1.4 Field of study	Mathematics
1.5 Studt cycle	Bachelor Degree
1.6 Study programme / Qualification	Mathematics, romanian language

2. Information regarding the discipline

2.1 Name of the discipline	Financial Mathematics						
2.2 Course coordinator	CHIOREAN Ioana Rodica						
2.3 Seminar coordinator							
2.4 Year of study	3	2.5 Semestrul	5	2.6. Type of evaluation	Ongoing verification	2.7 Type of discipline	optional

3. Timpul total estimat (hours/semester of didactic activities)

3.1 Hours per week	5	Of which: 3.2 course	2	3.3 seminar/project	1sem/2 project
3.4 Total hours in the curriculum	70	Of which: 3.5 course	28	3.6 seminar/project	14/28
Time allotment:					hours
Learning using manual, course support, bibliography, course notes					15
Additional documentation (in libraries, on electronic platforms, field documentation)					20
Preparation for seminars/labs, homework, papers, portfolios and essays					20
Tutorship					5
Evaluations					10
Other activities:.....					
3.7 Total individual study hours	70				
3.8 Total hours per semester	120				
3.9 Number of ECTS credits	6				

4. Prerequisites (if necessary)

4.1 curriculum	• Analysis , Algebra
4.2 competencies	-

5. Conditions (if necessary)

5.1 for the course	
5.2 for the seminar/lab	

6. Specific competencies acquired

Professional competence	Knowledge of Analysis and Algebra
Transversal Competence	

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

7.1 General objective of the discipline	Basic Notions of Financial Mathematics .
7.2 Specific objective of the discipline	Getting acquainted with the Financial Terminology

8. Contents

8.1 Course	Teaching methods	Remarks
1. Optimum and utility in financial mathematics	Exposing, examples	
2. The functions of the coin. Purchasing power. Devaluation	Exposing, examples	
3. Simple Interest	Exposing, examples	
4. Compound Interest	Exposing, examples	
5. Equivalent operations in simple interest	Exposing, examples	
6. Equivalent operations in compound interest	Exposing, examples	
7. Nominal percentage, real percentage and instant interest	Exposing, examples	
8. Inflation	Exposing, examples	
9. Simple discount	Exposing, examples	
10. Compound discount	Exposing, examples	
11. Nominal and actual discount	Exposing, examples	
12. Annuities	Exposing, examples	
13. Fractional payments	Exposing, examples	
14. Repayment of the loan	Exposing, examples	

References

- CHIOREAN, I., STAN, C., *Remarks on some recurrence relations in life annuities*, Studia Univ. Babeş-Bolyai, Mathematica, vol. LI, nr. 2, 2006, pp. 39-43
- CHIOREAN, I., *Parallel Algorithm for Solving the Black-Scholes Equation*, Kragujevac J. Math, 27 (

2005), pp.39-48

3. CHIOREAN, I., *On some Numerical Methods for Solving the Black-Scholes Formula*, Creative mathematics journal, vol.13, 2004, Pub.by Dep.of Math.and Comp.Science, North Univ.Baia-Mare, pp.31-36 (conf.ICAM4, Suior, Baia-Mare)

4. BLAGA, P., LUPAS, A., MURESAN, S.A., *Matematici financiare si actuariale*, Ed.Constant, Sibiu, 2001

8.2 Seminar	Teaching methods	Remarks
1. Utility in financial mathematics	Dialogue, explanations, discussions	
2. Purchasing power and devaluation	Dialogue, explanations, discussions	
3. Formula for computing simple interest	Dialogue, explanations, discussions	
4. Formula for computing compound interest	Dialogue, explanations, discussions	
5. Simple discount	Dialogue, explanations, discussions	
6. Compound discount	Dialogue, explanations, discussions	
7. Annuities	Dialogue, explanations, discussions	

References

.1. MIHOC, GH., *Teoria matematica a operatiunilor financiare*, Institut. de Statistica si actuariat, Bucuresti, 1959

2. PURCARU, I., *Matematici financiare*, Bucuresti, 1992

8.3 Project	Teaching methods	Remarks
1. Computing the utility in financial mathematics	Explanations, Individual work	
2. Determining the purchasing power of a coin on various concrete cases	Explanations, Individual work	
3. Financial calculations with simple interest	Explanations, Individual work	
4. Financial calculations with compound interest	Explanations, Individual work	
5. Examples of financial operations equivalent to simple interest	Explanations, Individual work	
6. Examples of financial operations equivalent to compound interest	Explanations, Individual work	
7. Simple discount financial operations	Explanations, Individual work	
8. Compound discount financial operations	Explanations, Individual work	
9. The difference between the nominal and the actual discount	Explanations, Individual work	

10. Calculation of anticipated annuities	Explanations, Individual work	
11. Calculation of posticipated annuities	Explanations, Individual work	
12. Evaluation of fractional payments	Explanations, Individual work	
13. Repayment of the loan	Explanations, Individual work	
14. Delivery the projects	Discussions	

References

1. FILIP, D.A., *Calculule financiare*, Ed.Dacia, Cluj-Napoca, 2000
2. PURCARU, I., *Matematici financiare*, Bucuresti, 1992

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

This Mathematics of Financial Operations curriculum covers the basic knowledge needs in this field

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Course	1. Understanding the terminology of financial language	Written exam	70%
	2 "Translation" of the financial problem in mathematical language		
10.5 Seminar/project	Applying financial calculations to solving specific field problems	Practice check	30%
10.6 Minimum performance standards			
<ul style="list-style-type: none"> • Making all project work (mandatory) and at least grade 5 on the written exam. 			

Data

11 Aprilie 2018

Signature of course coordinator

conf.dr.Ioana Chiorean

Signature of seminar coordinator

.conf.dr.Ioana Chiorean

Signature of the head of department

Prof.dr.Octavian Agratini

.....