UNIVERSITATEA BABEŞ-BOLYAI
BABEŞ-BOLYAI TUDOMÁNYEGYETEM
BABEŞ-BOLYAI UNIVERSITÄT
BABEŞ-BOLYAI UNIVERSITY
TRADITIO ET EXCELLENTIA

FACULTATEA DE BUSINESS IN PARTNERSHIP
Facultatea de Business

Str. Horea nr.7
Cluj-Napoca, 400174
Tel.: 0264599170
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SYLLABUS

Academic year 2023-2024

1. Information regarding the programme

1.1. Higher education institution	Babeş-Bolyai University
1.2. Faculty	Faculty of Business
1.3. Department	Business
1.4. Field of study	Business Administration
1.5. Study cycle	Bachelor
1.6. Study programme / Qualification	Business Administration (English)

2. Information regarding the course

2.1. Name of the course	Financial and actuarial mathematics						
2.2. Code	ILE0082						
2.3. Course coordinator	Assoc.prof. Gabriela Petruşel, PhD						
2.4. Seminar coordinator	Assoc.prof. Gabriela Petruşel, PhD						
2.5. Year of study	2	2.6. Semester	I	2.7. Type of evaluation	C	2.8. Type of course	elective

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

3.1. Hours per week	3	Of which: 3.2. lecture	2	3.3 seminar/laboratory	1
3.4. Total hours in the curriculum	42	Of which: 3.5. lecture	28	3.6. seminar/laboratory	14
Time allotment:					hours
Learning using manual, course support, bibliography, course notes					12
Additional documentation (in libraries, on electronic platforms, field documentation)					12
Preparation for seminars/labs, homework, papers, portfolios and essays					5
Tutorship					2
Evaluations					2
Other activities:					-
3.7. Total individual study hours					33
3.8. Total hours per semester					75
3.9. Number of ECTS credits					3

4. Prerequisites (if necessary)

4.1. curriculum	
4.2. competencies	

5. Conditions (if necessary)

5.1. for the course	classroom with computer and projector;
5.2. for the seminar /lab activities	classroom with computer and projector;

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6. Specific competencies acquired

Professional competencies	C1. Gathering, processing, and analysing data regarding the interaction between a company/ an organisation and the external environment. C1.3. Assessing critically and constructively the way of explaining and/or solving problems referring to the economic influence of the external environment on a company/an organization. C2. Providing assistance for running a company/ an organisation as a whole. C2.2. Explaining and interpreting the relationships among various entities in a company/ an organisation.
Transversal competencies	CT1. Implementing ethical principles, norms, and values within one's own rigorous, efficient, and responsible strategy of work.

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

7.1 General objective of the discipline	• acquire knowledge and skills in several areas of mathematics, economics and business critical applications; • developing skills of mathematical modelling of business processes; • communication skills in mathematical language;
7.2 Specific objective of the discipline	• the ability to understand the concept of financial transaction; • the ability to use the mathematical language in understanding economic phenomena; • the ability to interpret phenomena and economic trends through the mathematical apparatus;

8. Content

8.1 Course	Teaching methods	Remarks
1. Reviewing concepts of financial mathematics ✓ The notion of simple interest; ✓ The elements of simple interest; ✓ Another formula for simple interest; ✓ Number and divisor method;	interactive discussion,	one lecture
2. Simple interest rate operations ✓ Average replacement amount; ✓ Average replacement maturity; ✓ Average replacement percentage;	interactive discussion,	one lecture
3. The notion of compound interest ✓ The elements of compound interest; ✓ Real percentage, nominal percentage and instant interest;	interactive discussion,	one lecture

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4. Operations with compound interest rate ✓ Average replacement amount; ✓ Average replacement maturity; ✓ Average replacement percentage;	interactive discussion,	one lecture
5. Discount operations ✓ simple discount ✓ compound discount	interactive discussion,	one lecture
6. Real discount percentage ✓ Operations equivalent under discount	interactive discussion,	one lecture
7. Installment payments ✓ Impressed annuities;	interactive discussion,	one lecture
8. Temporary anticipated annuities	interactive discussion,	one lecture
9. Impacted fractionalities	interactive discussion,	one lecture
10. Mixed staggered payments -Revision	interactive discussion,	one lecture
11. Repayment of the single payment	interactive discussion,	one lecture
12. Repayment instages	interactive discussion,	one lecture
13 Revision solving a model for the final written test	interactive discussion,	one lecture
14. Final written test	interactive discussion,	one lecture

Bibliography:

1. Horiana Tudor, Ovidiu Popescu, *Matematici financiare si actuariale,* Editura Albastra, 2004 220 p.
2. Diana Andrada Filip *Matematici financiare si actuariale*
3. Cristian Chifu, Gabriela Petrusel, *Matematica aplicata in administrarea afacerilor,* Casa Cartii de Stiinta, 2012.
4. Wilkes M., *Mathematics for Business, Finance and Economics*, International Thomson Business Press, 1999.

8.2. Seminar	Teaching method	Remarks
1. Reviewing concepts of financial mathematics ✓ The notion of simple interest; ✓ The elements of simple interest; ✓ Another formula for simple interest; ✓ Number and divisor method;	exercise, case study	one seminar
2. Simple interest rate operations	exercise, case study	one seminar

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✓ Average replacement amount; ✓ Average replacement maturity; ✓ Average replacement percentage;		
3. The notion of compound interest ✓ The elements of compound interest; ✓ Real percentage, nominal percentage and instant interest;	exercise, case study	one seminar
4. Operations with compound interest rate ✓ Average replacement amount; ✓ Average replacement maturity; ✓ Average replacement percentage;	exercise, case study	one seminar
5. Discount operations ✓ simple discount; ✓ compound discount;	exercise, case study	one seminar
6. Real discount percentage ✓ Operations equivalent under discount;	exercise, case study	one seminar
7. Installment payments ✓ Impressed annuities;	exercise, case study	one seminar
8. Temporary anticipated annuities	exercise, case study	one seminar
9. Impacted fractionalities	exercise, case study	one seminar
10. Mixed staggered payments - Revision	exercise, case study	one seminar
11. Repayment of the single payment	exercise, case study	one seminar
12. Repayment instages	exercise, case study	one seminar
13. Revision solving a model for the final written test	exercise, case study	one seminar
14. Final written test	exercise, case study	one seminar

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4. Wilkes M., *Mathematics for Business, Finance and Economics*, International Thomson Business Press, 1999.

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 content is correspondence with what is done in other universities in the country and abroad.
- To adapt to the market demands of the contents meetings were held with representatives of the business community.

10. Evaluation

- **The same evaluation criteria hold for all exams sessions;**
- **In order to be able to cumulate the points obtained during the semester, it is mandatory to obtain minimum 5 (five) in the final exam.**

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Course	• correct logical and coherent application of the concepts learned • logical and accurate explanation and interpretation of the results;	Written test	60%
	• the ability to apply concepts learned in practice • correct logical and coherent application of the concepts learned • economic explanation of the results; • interest in the individual	Applicative activities (projects, essays, reports, etc.)	30% 10%

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	preparation throughout the whole semester	the active participation in seminars	
10.6 Minimum performance standards			
➢ Knowledge of the fundamental concepts and their application examples; ➢ The economic interpretation of the results.			

Date	Course coordinator	Seminar coordinator
29.09.2023	Conf.dr. Gabriela PETRUŞEL	Conf.dr. Gabriela PETRUŞEL
Date of approval		Head of department
11.10.2023		Prof.dr. Ioan Cristian CHIFU