SYLLABUS
Academic year 2022-2023

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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TRADITIO ET EXCELLENTIA

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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. C1.1. Explaining and interpreting the economic influence of the external environment on a company/ an organisation. 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	CT. 1. Implementing ethical principles, norms, and values within one's own rigorous, efficient, and responsible strategy of work. CT.2. Identifying the roles and responsibilities in a multispecialty team and implementing various relational techniques and efficient teamwork. CT. 3.Identifying various opportunities for continuing education and efficiently using learning resources and techniques for their development.

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 ✓ Average replacement amount; ✓ Average replacement maturity; ✓ Average replacement tudent percentage;	exercise, case study	one seminar
3. The notion of compound interest ✓ The elements of compound interest;	exercise, case study	one seminar

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✓ Real percentage, nominal percentage and instant interest;		
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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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;	Applicative activities (projects, essays, reports, etc.)	30%
	• interest in the individual preparation throughout the whole semester	the active participation in seminars	10%
10.6 Minimum performance standards			
➢ Knowledge of the fundamental concepts and their application examples; ➢ The economic interpretation of the results.			

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Date	**Signature of course coordinator**	**Signature of seminar coordinator**
04.05.2022	**Assoc. Prof. Gabriela PETRUŞEL**	**Assoc. Prof. Gabriela PETRUŞEL**

Date of approval		**Signature of the head of department**
20.05.2022		**Prof.dr. Ioan Cristian CHIFU**