SYLLABUS

1. Information regarding the program

1.1 Higher education institution	**UNIVERSITY OF ORADEA**
1.2 Faculty	**FACULTY OF ECONOMIC SCIENCES**
1.3 Department	**DEPARTMENT OF ECONOMY AND BUSINESS**
1.4 Field of study	**BUSINESS ADMINISTRATION**
1.5 Cycle of study	**CYCLE I - BACHELOR**
1.6 Program of study/Degree	**BUSINESS ADMINISTRATION / BACHELOR'S DEGREE**

2. Information regarding the discipline

2.1 Name of discipline			**Mathematics applied in economics (FSTE-0618)**				
2.2 Course titleholder			Prof. PhD. Ioana Teodora MEȘTER				
2.3 Seminar titleholder			Prof. PhD. Ramona Marinela SIMUȚ				
2.4 Year of study	I	2.5 Semester	I	2.6 Type of assessment	Cv	2.7 Type of discipline	I

(I) Compulsory; (O) Elective; (F) Facultative

3. Estimated totaltime(hours/semester of activities)

3.1 Number of hours/week	2	out of which: 3.2 course	1	3.3 seminar	1
3.4 Total of hours in the Curriculum	28	out of which: 3.5 course	14	3.6 seminar	14
Distribution of hours:					47hours
Studying the workbook, course book, bibliography and notes					15hours
Supplementary documentation in the library, on electronic specialty sites and in the field					15hours
Preparing seminars/laboratories, themes, projects, portfolios and essays					16hours
Tutorship					0hour
Assessment activities					1 hour
Other activities.....					0 hours

3.7 Total hours of individual study	**47**
3.9 Total hours/semester	**75**
3.10 Number of credits	3

4. Pre-requisites (if applicable)

4.1 Curriculum	-
4.2 Skills	-

5. Conditions(if applicable)

5.1. concerning the course activities	PowerPoint
5.2. concerning the seminar/laboratory activities	PowerPoint

6.1. Specific skills acquired	
Professional skills	C1. Collection, processing and analysis of the information regarding the interaction between business environment firm / organization C3. Administration of the activity of a subdivision of the structure of the firm/organization C4. Assistance in human resources management C6. Managing the relations with clients and suppliers
Transversal Skills	

6.2. Expected Learning Outcomes

Knowledge	The Student/Graduate operates with concepts, indicators, models, tools, and mathematical methods in order to analyze and optimize managerial processes in correlation with the organization's environment. The Student/Graduate applies elements of financial mathematics, optimization of multivariable functions, forecasting of economic indicators over time, probabilistic modeling of economic phenomena occurring under conditions of risk and uncertainty, evaluation of statistical indicators that characterize an economic phenomenon, and estimation of model parameters. The Student/Graduate identifies, differentiates, and coherently analyzes the definition of concepts, models, and quantitative methods required in the decision-making process within organizations.
Skils	he Student/Graduate models an economic process and its determining factors by using multivariable functions. The Student/Graduate applies mathematical algorithms to determine the optimal solution to a maximization or minimization problem of a function that models a performance indicator. The Student/Graduate develops probabilistic models of economic phenomena, evaluates the outcome associated with each scenario, and estimates the expected result based on the identified scenarios by using numerical characteristics of random variables (mean, variance, correlation coefficient). The Student/Graduate analyzes data, estimates the parameters of a statistical model, and substantiates managerial decisions on this basis. The Student/Graduate quantifies the time value of a capital flow by applying financial mathematics models.
Responsibility and Autonomy	The Student/Graduate independently applies quantitative analysis methods and advanced computational techniques to evaluate outcomes and the impact of determining factors in complex economic and managerial problems encountered in organizational practice. The Student/Graduate responsibly applies mathematical forecasting methods and optimization algorithms in decision-making regarding the organization's operations. The Student/Graduate scientifically substantiates managerial decisions through the use of probabilistic modeling tools, statistical analysis, estimation of expected outcomes, and optimization of performance indicators.

6.3. Objectives of discipline (resulting from the grid of specific skills acquired)

6.3.1 General objective of discipline	▪ Getting the students used to the main notions used in mathemathics, which will offer the students the possibility to develop mathematical models for the economic phoenomena, as well as touse modern methods and techniques of organizationand management. ▪ Developping the abstractisation and interpretation skills of the results.
6.3.2 Specific objectives	▪ Knowing and understanding mathematical notions. ▪ Knowing and understanding mathematical notions applied in economics. ▪ Knowing and understading financial mathematics notions. ▪ Explaining the mathematical apparel used in economics ▪ Explaining the mathematical results. ▪ Explaining the formulas used in actuarial and financial calcullus ▪ Developping the generalization abilities in order to use mathematics For the analysis of economic phoenomena ▪ Getting used to mathematical calcullus ▪ Developping a positive attitude towards the importance of mathematics in economy ▪ Promoting a value-centered scientific environment

7. Contents

7.1 Course (C)	Teaching methods	Observations
7.1.1. Introductory course. Presentation of the course syllabus.	Lecture, conversation, examples, explanation, demonstrations, exercises	1 hour
7.1.2. Elements of probability theory applied to economics.	Lecture, conversation, examples, explanation, demonstrations, exercises	1 hour
7.1.3. Random variables and their economic interpretation. Probability distributions used in economic analysis – the normal distribution.	Lecture, conversation, examples, explanation, demonstrations, exercises	2 hours
7.1.4. Simple interest and compound interest.	Lecture, conversation, examples, explanation, demonstrations, exercises	1 hour
7.1.5. Time value of money – discounting, compounding, present value and future value.	Lecture, conversation, examples, explanation, demonstrations, exercises	1 hour

7.1.6. Instalment payments. Annuities and loans – instalments, repayment, cost of credit.	Lecture, conversation, examples, explanation, demonstrations, exercises	2 hours
7.1.7. Financial investments in stocks and bonds.	Lecture, conversation, examples, explanation, demonstrations, exercises	1 hour
7.1.8. Return and volatility. Risk of financial asset portfolios.	Lecture, conversation, examples, explanation, demonstrations, exercises	1 hour
7.1.9. Continuous assessment.	Lecture, conversation, examples, explanation, demonstrations, exercises	2 hours
7.1.10. Final assessment.	Lecture, conversation, examples, explanation, demonstrations, exercises	2 hours

Bibliography

- Meşter, Ioana, *Econometrie,* Ed. Universităţii din Oradea, 2012
- Gogoneața, B., *Economia riscului și incertitudinii*, Ed. Economică, București, 2004
- Dedu, Silvia, Șerban, F., *Matematici aplicate în economie*, Ed. Teocora, București, 2006
- Purcaru, I., *Matematică și asigurări,* Editura Economică, București, 1994

7.2 Seminaire (S)	Teaching methods	Observations
7.2.1. Introductory seminar. Presentation of the course syllabus.	Lecture, explanation, exercises	1 hour
7.2.2. Applications of probability theory.	Lecture, explanation, exercises	1 hour
7.2.3. Applications involving random variables.	Lecture, explanation, exercises	2 hours
7.2.4. Applications involving simple and compound interest.	Lecture, explanation, exercises	1 hour
7.2.5. Applications involving discounting. Present value and future value of a single payment.	Lecture, explanation, exercises	1 hour
7.2.6. Applications involving instalment payments.	Lecture, explanation, exercises	1 hour
7.2.7. Mid-semester assessment – test.	Lecture, explanation, exercises	1 hour
7.2.8. Applications involving the present value and future value of a single payment.	Lecture, explanation, exercises	2 hours
7.2.9. Applications involving the volatility of financial asset portfolios. Risk of financial asset portfolios.	Lecture, explanation, exercises	2 hours
7.2.10. Review.	Lecture, explanation, exercises	2 hours

Bibliography

- Meşter, Ioana, *Econometrie,* Ed. Universităţii din Oradea, 2012
- Gogoneața, B., *Economia riscului și incertitudinii*, Ed. Economică, București, 2004
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- Purcaru, I., *Matematică și asigurări,* Editura Economică, București, 1994

8. Corroboration of the contents of the discipline with the expectations of the epistemic community, professional associations and employers representing the field of study of the program

- The course content is consistent with what is being studied in other universities in our country and abroad.
- To better adapt the contents of the discipline to market demands there have been meetings held with the representatives of several companies in Oradea.

9. Use of Generative Artificial Intelligence Tools

The use of generative artificial intelligence (GenAI) tools is **not permitted** during assessment activities (written examination).

10. Assessment

Type of activity	Assessment criteria	Assessment methods	Percentage of the final grade
Course (C)	Knowledge and understanding of the course content. Ability to correctly solve subject-specific problems. Ability to correctly interpret the results. The assimilation of notions. Specific language coherence.	Written paper	60%
Seminar (S)	The capacity to correctly solve an exercise.	1 written paper during the semester	40%

Minimum performance standard
▪ The ability to use basic concepts to solve a simple math financial problem. ▪ The correct interpretation of the values obtained in a financial mathematics problem. ▪ Obtaining at least the 4,50 grade at the written paper during the exam session

Date	Course titleholder:	Seminar titleholder:
23.09.2026	**Professor, Ioana Teodora MEȘTER, PhD** E-mail address: imester@uoradea.ro	**Professor, Ramona Simuț, PhD.** E-mail address: simut.ramona@yahoo.com

Director of Department,
Professor, Dorin Paul BÂC, PhD

Date of approval in the Department:

24.09.2026

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Dean,
Professor, Diana Sabău POPA, PhD

Date of approval in The Council of the Faculty of Economic Sciences:

28.09.2026

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