

Study Course Title	Mathematics
Study Course Code	MateB107
Branch of Science	Mathematics
Credits(ECTS)	6
Total Number of Contact Hours	60
Number of Lecture Hours	18
Number of Seminar and Practical Assignment Hours	42
Number of Hours for Laboratory Assignments	0
Independent Study Hours	90
Language of Instruction	Latvian and English
Course Approval Date	04.09.2025
Responsible Unit	BA School of Business and Finance of the University of Latvia

Study form	Lectures	Seminars and Practical Assignments	Laboratory Assignments	Independent Studies
Full-time Regular Studies	18	42	0	90
Distance learning	4	8	0	138

Course Developer

Dr. phys., Assoc. prof. Aivars Vembris

Prerequisite Knowledge

Knowledge of mathematics at the secondary education level

Study Course Abstract

In the study process, students will acquire knowledge, skills, and abilities that will enable them to productively and creatively use mathematical methods in specialized economics courses, interpreting the results of calculations done with mathematical models. The content selection is guided by textbooks in mathematics, microeconomics, macroeconomics, and other economics disciplines. The course widely applies economic interpretations of mathematical concepts and facts.

Aim of Course - to provide students with an understanding of basic mathematical concepts and relationships widely used in modern economics.

Course Plan Full-time Regular Studies

1. Introduction. Use of mathematics in the economy 3L 3Pd
 - 2.The elements of set theory 2L 2Pd
 - 3.Functions 2L 11Pd
 - 4.Limits and its application in economy 2L 2Pd
 5. Derivatives, flexibility and its application in economy 3L 12Pd
 - 6.Integrals and its application in economy 3L 9Pd
 - 7.Multiple argument functions and its application in economy 2L 2Pd
 - 8.Simple and compounded interest scheme 1L 1Pd
- Total 18L 42Pd

Course Plan Distance learning

1. Introduction. Use of mathematics in the economy 1L
- 2.The elements of set theory 1Pd
- 3.Functions 1L 1Pd
- 4.Limits and its application in economy 1L 1Pd

- 5. Derivatives, flexibility and its application in economy 2Pd
 - 6. Integrals and its application in economy 2Pd
 - 7. Multiple argument functions and its application in economy 1Pd
 - 8. Simple and compounded interest scheme 1L
- Total 4L 8Pd

Characterization of students' independent work organization and tasks

Full-time: Group work and presentations on results.
Distance: Independent study via Moodle (video lectures, study materials, self-assessment tests, etc.)

Learning Outcomes

Knowledge:

- 1. Ability to use mathematical methods productively and creatively in economics courses. Interpretation of model-based calculations.

Skills:

- 2. Quantitative analysis of economic problems.
- 3. Mathematical formulation and solving of economic tasks.

Competence:

- 4. Use derivatives for economic problem-solving.
- 5. Use integrals for economic problem-solving.
- 6. Apply simple and compounding interest scheme.

Requirements for Awarding Credits

Full-time

Intermediate tests or midterms:

- 1. Test - The test is graded on a 10-point scale. Weighting in the overall grade – 40%
- 2. Group work - The test is graded on a 10-point scale. Weighting in the overall grade – 40%
- 3. Active participation - The test is graded on a 10-point scale. Weighting in the overall grade – 5%

Final test:

- Exam - The test is graded on a 10-point scale. Weighting in the overall grade – 15%

Distance

Intermediate tests or midterms:

- 1. Test - The test is graded on a 10-point scale. Weighting in the overall grade – 40%
- 2. Practical (Group/individual) work - The test is graded on a 10-point scale. Weighting in the overall grade – 40%

Final test:

- 3. Exam - The test is graded on a 10-point scale. Weighting in the overall grade – 20%

Criteria for Evaluating Learning Outcomes

In accordance with Regulations of the Cabinet of Ministers of the Republic of Latvia, at the end of the course, students' knowledge is evaluated according to the following criteria: the amount and the quality of the obtained knowledge, acquired skills and competence in compliance with the planned learning outcomes.

Type of Assessment	Learning Outcomes					
	1	2	3	4	5	6
1. Test	+	-	-	+	-	+
2. Group work (Full-time)	-	-	-	+	+	+
3. Active participation	+	+	+	+	+	+
4. Practical work (Distance)	+	+	+	+	+	+
5. Exam	+	+	+	+	+	+

Compulsory Reading List

1. Ernest F. Haeussler, Richard S. Paul, Richard J. Wood, Introductory Mathematical Analysis for Business, Economics, and the Life and Social Sciences (13th or 14th edition), 2021
2. Barnett, Raymond A., Ziegler, Michael R., Byleen, Karl E.
College Mathematics for Business, Economics, Life Sciences, and Social Sciences, 2018

Further Reading List

1. Budnick, Frank S. Applied Mathematics for Business, Economics, and the Social Sciences, 1992