

South East European University, Tetovë

<b>Business Mathematics – 6 ECTS</b>
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**Location:**

**Times:**

**Department:**    Business Administration, Undergraduate Studies

## Required Materials

- F. Berisha, *Leksione nga matematikë biznesi*, UEJL, Tetovë 2007.
- D. P. Maki, M. Thompson, *Finite mathematics*, Mc Graw Hill, 2005.
- R. J. Harshbarger, J. J. Reynolds, *Mathematical applications for the management, life, and social sciences*, Houghton Mifflin, 2006.

## Materials for additional reading

- S. T. Karris, *Mathematics for business, science and technology*, Orchard Publications, 2003.
- J. Slater, R. Ponticelli, *Business mathematics for college*, Irwin, 1997.
- L. D. Hoffmann, G. L. Bradley, *Calculus - for business economics, and the social and life sciences*, Mc Graw Hill, 2000.
- T. Mitre, B. Ruseti, O. Stringa *Matematika I për Fakultetin Ekonomik*, Tiranë, 1990.
- F. Rizvanolli, M. Dema, *Matematika për ekonomistët*, Prishtinë, 1995.
- D. Janev, M. Mitsevska, M. Stojanovski, K. Naumov, *Primeneta matematika: biznes i ekonomija*, Shkup, 1998.
- A. Ahmeti, *Matematika për ekonomistë*, Prishtinë, 2003.

## Course Description

The course introduces the basic notions of linear models, number sequences and their applications, calculating interest and mortgages, and decision making.

Teaching delivery will be by two lectures and one exercise per week in small groups of students.

Lectures will be supported by detailed handouts. At each point the previously learned concepts will be employed and reinforced. Computer applications using a spreadsheet software will be demonstrated to the students.

Student will be encouraged to active contributions in discussing and solving problems and exercises, which will be presented to them on regular basis.

## Course Objectives

- To ensure that students have abilities to apply the knowledge about linear models and number sequences for solving different problems involving applications in business and economy.

- To ensure that students possess advanced knowledge about compound interest calculation, mortgages, and financial decision making.

## Evaluation Policy

Each student will be evaluated at the end of the semester according to the total number of points accumulated from: exams, homework and participation into the classroom activities. The assignments will be designed to measure the students knowledge of the module content and their abilities to apply the knowledge in solving application problems. The percentage achieved by a student will be used to calculate the students final course grade as described in the table below.

Grade Scale	Grade Description	Grade Points	Letters
95%–100%	Magnificent	10	A
86%–94%	Excellent	9	A–
77%–85%	Very Good	8	B
68%–76%	Good	7	C
60%–67%	Satisfactory	6	D
59%–below	Failing	5	F

## Evaluation

Assignments given to the students will be graded by the following scheme.

Assignment	Num. Points
Homework	10
Midterm exam	30
Quiz	10
Final exam	40
Participation	10

## Attendance Policy

Attendance is compulsory.

## **Academic Integrity**

Cheating, in all of its forms, is strictly forbidden. The penalty for academic dishonesty is failing the student in the module.

## Course Content

Date	Topics	References
Week 1	Numbers and arithmetic operations. Number systems. Positive and negative numbers. Addition and subtraction. Multiplication and division. Integer and fractional numbers. Reciprocals of numbers.	<ol style="list-style-type: none"> <li>1. Section 1.1 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> <li>2. Sections 1.1–1.12 in S. T. Karris, <i>Mathematics for business, science and technology</i>.</li> </ol>
Week 2	Exponents. Common and natural logarithms. Square roots. Percentages.	<ol style="list-style-type: none"> <li>1. Section 1.2, 1.3 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> <li>2. Sections 1.12–1.32 in S. T. Karris, <i>Mathematics for business, science and technology</i>.</li> </ol>
Week 3	Elementary algebra. Introduction. Algebraic equations. Laws of exponents. Laws of logarithms. Quadratic equations. Algebraic inequalities.	<ol style="list-style-type: none"> <li>1. Chapter 2 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> <li>2. Sections 2.1–2.11 in S. T. Karris, <i>Mathematics for business, science and technology</i>.</li> </ol>

Week 4	Systems of linear equations. The setting and overview: linear models. Review of equations and graphs of lines. Formulation and solution of systems of linear equations in two variables.	<ol style="list-style-type: none"> <li>1. Sections 3.1–3.3 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> <li>2. Sections 5.0–5.2 in D. P. Maki, M. Thompson, <i>Finite mathematics</i>.</li> </ol>
Week 5	Formulation and solution of systems of linear equations in three or more variables.	<ol style="list-style-type: none"> <li>1. Sections 3.4, 3.5 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> <li>2. Section 5.3 in D. P. Maki, M. Thompson, <i>Finite mathematics</i>.</li> </ol>
Week 6	Matrix algebra. The setting and overview. Matrix notation and algebra. Matrix inverses.	<ol style="list-style-type: none"> <li>1. Section 3.6 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> <li>2. Sections 6.0–6.2 in D. P. Maki, M. Thompson, <i>Finite mathematics</i>.</li> </ol>
Week 7	Applications in business and economics. A linear Economic Model.	<ol style="list-style-type: none"> <li>1. Section 3.7 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> <li>2. Section 6.3 in D. P. Maki, M. Thompson, <i>Finite mathematics</i>.</li> </ol>

Week 8	Linear programming: modeling and graphical solution. The setting and overview: linear optimization models. Formulation of linear programming problems. Systems of linear inequalities in two variables. Graphical solution of linear programming problems with two variables.	<ol style="list-style-type: none"> <li>1. Chapter 4 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> <li>2. Sections 7.0–7.3 in D. P. Maki, M. Thompson, <i>Finite mathematics</i>.</li> </ol>
Week 9	Number sequences. Arithemtical and geometrical progressions. Infinite sequences.	<ol style="list-style-type: none"> <li>1. Sections 4.1–4.3 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> <li>2. Sections 2.18–2.21 in S. T. Karris, <i>Mathematics for business, science and technology</i>.</li> </ol>
Week 10	Sequence limit. Number series.	<ol style="list-style-type: none"> <li>1. Sections 4.4, 4.5 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> </ol>
Week 11	Mathematics of finance. The setting and overview. Interest. The present value of future payments.	<ol style="list-style-type: none"> <li>1. Sections 5.1–5.3 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> <li>2. Sections 9.0–9.3 in D. P. Maki, M. Thompson, <i>Finite mathematics</i>.</li> </ol>

Week 12	Time payments, amortization and mortgages. Sinking funds. Annuities.	<ol style="list-style-type: none"> <li>1. Sections 5.4–5.7 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> <li>2. Section 9.4 in D. P. Maki, M. Thompson, <i>Finite mathematics</i>.</li> </ol>
Week 13	Evaluating investment options and financial decision making. Valuation of bonds.	<ol style="list-style-type: none"> <li>1. Sections 5.8, 5.9 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> <li>2. Section 9.5 in D. P. Maki, M. Thompson, <i>Finite mathematics</i>.</li> </ol>
Week 14	Spreadsheet financial functions.	<ol style="list-style-type: none"> <li>1. Sections 5.10 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> <li>2. Section 7.8 in S. T. Karris, <i>Mathematics for business, science and technology</i>.</li> </ol>
Week 15	Depreciation. Depreciation rules.	<ol style="list-style-type: none"> <li>1. Sections 5.11 in F. Berisha, <i>Leksione nga matematikë biznesi</i>.</li> <li>2. Section 8.1–8.4 in S. T. Karris, <i>Mathematics for business, science and technology</i>.</li> </ol>