



COURSE UNIT DESCRIPTION

Course unit title	Course unit code
Business mathematics	

Lecturer(s)	Department where the course unit is delivered
Coordinator: assoc. prof. dr. Gintautas Bareikis Other lecturers: -	Faculty of Economics and Business Administration

Cycle	Type of course unit
First	Compulsory for students of management

Mode of delivery	Semester or period when the course unit is delivered	Language of instruction
Face-to-face or Hybrid	1 th semester	English

Prerequisites
Prerequisites: School - level . knowledge of mathematics

Number of ECTS credits allocated	Student's workload	Contact hours	Individual work
5	130	48	82

Purpose of the course unit: programme competences to be developed		
Purpose of the course unit: To get acquainted with the basic knowledge of linear algebra, differential and integral calculus and optimization methods.		
Learning outcomes of the course unit	Teaching and learning methods	Assessment methods
Will understand the concepts of linear system of equations. Be able to find solutions of the system. Be able to apply this concept modelling business situations.	Lectures, auditorials, solution and analysis of exercises, consultations, discussions.	Check on of answers and solutions to the given exercises, examinations of answers to the theoretical problems of the mid-term and final exams.
Will understand the concept of matrix and their operations. Be able to solve matrix equations, least square method using matrix algebra. Be able to apply matrix method solving systems of linear equations.	Lectures, auditorials, solution and analysis of exercises, consultations, discussions.	Check on of answers and solutions to the given exercises, examinations of answers to the theoretical problems of the mid-term and final exams.
Will understand Leontief method. Be able to find optimal solution. Will know how to use matrix algebra for description of the real phenomena	Lectures, auditorials, solution and analysis of exercises, analysis of examples, solution of exercises, individual and group consultations.,,	Check on of answers and solutions to the given exercises, examinations of answers to the theoretical problems of the mid-term and final exams.
Will understand the concept function and sequence of the real numbers. Be able to analyze real valued functions, find inverse function, functions. Modeling business situations using functions.	Lectures, auditorials, solution and analysis of exercises, analysis of examples, solution of exercises, individual and group consultations.	Check on of answers and solutions to the given exercises, examinations of answers to the theoretical questions of the mid-term and final exams.

Will understand concepts of the function limit and continuity Be able to evaluate limits of the function, be able find points of discontinuity.	Lectures, auditorials, solution and analysis of exercises, analysis of examples, solution of exercises, individual and group consultations.	Check on of answers and solutions to the given exercises, examinations of answers to the theoretical questions of the mid-term and final exams.
Will be able corectly formulate the problems related with derivative parameters Be able find minimum-maximum values of the given functions, evaluate derivatives of the functions. Be able to apply this concept modelling business situations.	Lectures, auditorials, solution and analysis of exercises analysis of examples, solution of exercises, individual and group consultations.	Check on of answers and solutions to the given exercises, examinations of answers to the theoretical questions of the mid-term and final exams.
Will understand the idea of the indefinite and definite integrals, will acquainted with the properties of the integral and will know how to use them evaluating integrals. Will be acquainted with integration methods. Improper integral. Be able to apply integral concept modelling business situations.	Lectures, auditorials, solution and analysis of exercises analysis of examples, solution of exercises, individual and group consultations.	Check on of answers and solutions to the given exercises, examinations of answers to the theoretical questions of the mid-term and final exams.
Will be able to apply the mathematical concepts modelling financial situations.	Lectures, auditorials, solution and analysis of exercises analysis of examples, solution of exercises.	Check on of answers and solutions to the given exercises, examinations of answers to the theoretical questions of the mid-term and final exams.

Course content: breakdown of the topics	Contact hours						Individual work: time and assignments		
	Lectures	Tutorials	Seminars	Practice	Laboratory work	Practical training	Contact hours	Individual work	Assignments
1. Systems of the linear equations	3			2			5	10	Tasks for the individual work at home and in classes.
2. Matrix algebra. Matrix applications.	6			2			8	10	Tasks for the individual work at home and in classes.
3. Functions of one variables.	3			2			5	12	Tasks for the individual work at home and in classes.
4. Function limit. Continuity.	4			2			6	10	Tasks for the individual work at home and in classes.
5. The derivative of a function of one variable. Applications of the derivatives.	5			2			7	14	Tasks for the individual work at home and in classes.
6. The functions of many variables. Partial derivatives.	5			3			8	12	Tasks for the individual work at home and in classes.

7. Elementary financial mathematics	6			3			9	14	Tasks for the individual work at home and in classes.
Total	32			16			48	82	

Assessment strategy	Weight %	Deadline	Assessment criteria
Work at classes solving homeworks assignments	15	In the course of semester	The right answers to the theoretical and practical tasks are accepted. Partly true answers can be credited by part of a point too.
Colloquium	30	The first part of the semester	The answer to the theoretical and practical questions are credited with points. The minimum number of points to satisfy the examiners is indicated. A partially correct answers are credited by part of a point too.
Colloquium	40	At the end of the semester or in examination period	The answer to the theoretical and practical questions are credited with points. The minimum number of points to satisfy the examiners is indicated. A partially correct answers are credited by part of a point too.
The final exam (Theoretical test)	15	Examination period	The test can consist of closed and open questions. The minimum number of points to be passed by the examiner shall be indicated. A partly correct answer to open-ended questions is also credited by part of a point too.

Author	Publishing year	Title	Issue No or volume	Publishing house or Internet site
Required reading				
Bareikis G.	2014	Higher mathematics for business		http://www.mif.vu.lt/katedros/matinf/asm/bg/bg.html
Sydsaeter, K.; Hammond, P.	2016	Essential Mathematics for Economic Analysis	5 th edition	Prentice Hall
Supplementary reading				
Taylor, R.; Hawkins, S.	2009	Mathematics for economics and business		Boston:McGrawhill