Institution: Šiauliai State College
Study programme: Information Systems Technology

DESCRIPTION OF THE STUDY SUBJECT

Title

APPLIED MATHEMATICS

Scope of the subject

Semester	**Mode of studies**	**Structure***					**Total number of hours**	**Number of credits**	**Group and type of subjects**
		L	**PS**	**Lw**	**C**	**S**			
I	Full-time	17	34	4	10	68	213	8	Compulsory subjects of the study field
II		13	18	2	6	41			
I	Part-time	8	14	2	28	55			
II		8	14	2	28	54			

*L – lectures, PS – practical activities, seminars, LW – laboratory work, PR – practice, CP – course paper, C – consultations, S – self-study

Aim of the subject

To develop, deepen and systematize knowledge of mathematics. To develop logical and critical thinking, the need to take interest in application of mathematics methods in economics and statistics. To analyze and ground results (solutions).

Necessary background knowledge for studying the subject

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Content of the subject

Title of the topic and description of the content	**Number of contact hours**				**S**	**Total number of hours**
	L	**PS**	**Lw**	**C**		
1. Sets: operations with sets.	1	1	-	1	4	**7**
2. Matrices: the concept of a matrix. Operations with matrices. Calculation of determinants. Finding the inverse of a matrix.	2	6	-	1	6	**15**
3. Systems of linear equations: solution of systems of linear equations using Gaussian, Cramer's and inverse matrix methods.	2	4	-	1	6	**13**
Test No. 1	-	2	-	1	6	**9**
4. The limit of a function. Calculation of limits: the limit of the function, rules for calculation of limits.	3	5	-	1	6	**15**
5. Differential calculus: function derivative and differential, differential calculation rules and application.	3	6	-	1	6	**16**
Test No.2	-	2	-	1	6	**9**
6. Elements of analytic geometry: a circle, ellipse, hyperbola and parabola.	2	3	-	1	6	**12**
7. Linear inequalities and optimal planning: drawing up of a mathematical model. Linear programming problems. Geometric interpretation.	2	2	-	1	6	**11**
8. Computer mathematics systems: solving of problems using the program MathCad.	2	3	4	1	4	**14**
I semester. Preparation for the examination and taking the examination.				-	12	**12**
I semester. Total number of hours	**17**	**34**	**4**	**10**	**68**	**133**
1. Integral calculus: integral calculus rules, indefinite and definite integrals, their calculation and application.	3	6	-	1	5	**15**
2. Differential equations: solving of first-order differential equations. Applications.	4	4	-	1	5	**14**
Test	-	2	-	1	6	**9**
3. Probability theory: combinatorics, probability calculations. Conditional probability.	2	2	-	1	3	**8**
4. Statistics: descriptive statistics, data processing, methods.	2	2	-	1	3	**8**
5. Systems of computer mathematics. Solving of problems using the program MathCad.	2	2	2	1	4	**11**
II semester. Preparation for the examination and taking the examination.				-	15	**15**
II semester. Total number of hours	**13**	**18**	**2**	**6**	**41**	**80**
Total number of hours	**30**	**52**	**6**	**16**	**109**	**213**

Assessment of learning outcomes

Ten-point criteria-based assessment system as well as cumulative assessment using individual cumulative index (ICI) are applied. The overall grade is the sum of grades for intermediate accountings and examination (E) multiplied by weighted coefficients.
ICI1 = 0,25 T1 + 0,25 T2 + 0,5 E
ICI2 = 0,4 T3 + 0,6 E, where T1, T2, T3 – tests
ICI = 5/8 ICI1 + 3/8 ICI2

Recommended literature

Key literature						
No.	**Year of publishing**	**Year of publishing**	**Author(s) and title of the publication**	**Number of copies and/or internet link**		
				ŠSC library	**Other premises**	**Other libraries ***
1.	2015	Rimkevičienė A. Matematikos uždavinynas	Šiaulių kolegijos leidybos centras	10	1	3
2.	2004	Stasiūnienė D., Šedžiuvienė N. Matematika	Jasena	9	1	5

Additional literature			
No.	**Year of publishing**	**Author(s) and title of the publication**	**Publishing house and/or internet link**
1.	2015	Vaičiulytė I. Taikomoji matematika	Šiaulių universiteto leidykla http://ebooks.svako.knyginiankas.lt/knygu_lentyna/matematika/
2.	2004	Bačinskas A., Janilionis V., Jokimaitis A. Tikimybių teorijos ir statistikos praktikumas.	Technologija
3.		Practical Algebra Lessons	http://www.purplemath.com/modules/index.htm
4.	2000	Apynis A., Stankus E. Taikomoji matematika	VVK leidykla

* ŠAVB – Šiauliai Region Povilas Višinskis Public Library, ŠU – library of Šiauliai University

Required material resources and their short description

- **Equipment (devices):** computers (16 units), computers connected to the local network and connected to the Internet, multimedia projector.
- **Software:** MathCADPrime 3.0 or later or another applied software for solving mathematical problems.

The description prepared by:

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