UNIVERSITY OF ECONOMICS - VARNA

FACULTY OF „INFORMATICS"

DEPARTMENT „APPLIED MATHEMATICS"

ACCEPTED BY:

Rector:

(Prof. Dr. Plamen Iliev)

SYLLABUS

SUBJECT: "Mathematics";

PROGRAMME: Preparatory course in English; DEGREE: Bachelor;

YEAR OF STUDY: Preparatory; SEMESTER: Second;

TOTAL STUDENT WORKLOAD: 132 h.; incl. curricular 60 h.

CREDITS: 4

DISTRIBUTION OF WORKLOAD ACCORDING TO THE CURRICULUM

TYPE OF STUDY / HOURS	WORKLOAD, h.	TEACHING HOURS PER WEEK, h
CURRICULAR: incl. • LECTURES • SEMINARS (lab. exercises)	- 60	- -
EXTRACURRICULAR	72	-

PREPARED BY:

1. ……………………………………..
(Assoc. Prof. Dr. Rosen Nikolaev)

2. ………………………………...…
(Chief Assist. Prof. Dr. Radan Miryanov)

HEAD OF DEPARTMENT: ……………………………………….
"Applied Mathematics"   (Assoc. Prof. Dr. Rosen Nikolaev)

I. ANNOTATION

The main aim of the Preparatory course programme in Mathematics is to provide the students in their preparatory year before admission to University of Economics – Varna with really thorough and complete education focused on basic mathematics and to prepare them for a further study in the Bachelor's and Master's degree programmes. At the end of the course students are expected to have skills and erudition for working with all the fundamental mathematical terms and to apply them in solving problems, important for their first year in the university.

II. THEMATIC CONTENT

No	TITLE OF UNITS AND SUBTOPICS	NUMBER OF HOURS		
		L	S	L.E.
	1. Numbers	0	4	
1.1	Numerical Sets			
1.2	Rational Numbers			
1.3	Real Numbers			
	2. Algebraic Expressions	0	6	
2.1	Basic Operations on Algebraic Numbers			
2.2	Identity (Equation or Inequality)			
2.3	Greatest Common Factor (GCF)			
2.4	Polynomial Long Division			
2.5	Fraction Rules. Direct Variation and Inverse Variation			
	3. Linear Equations and Inequalities	0	6	
3.1	Linear Function. Linear Equations			
3.2	System of Linear Equations			
3.3	Linear Inequalities			
3.4	System of Linear Inequalities			
	4. Quadratic Equations and Inequalities	0	6	
4.1	Quadratic Function. Quadratic Equations			
4.2	Quadratic Inequalities			
4.3	System of Quadratic Equations			
	5. Equations and Inequalities of Higher Degree	0	6	
5.1	Biquadratic Function. Biquadratic Equations			
5.2	Biquadratic Inequalities			
5.3	Other Equations and Inequalities of Higher Degree			
	6. Irrational Equations and Inequalities	0	6	
6.1	Irrational Equations			
6.2	Irrational Inequalities			
	7. Sequences and Series	0	4	
7.1	Convergent and Divergent Sequences. Limits			
7.2	Arithmetic Series and Geometric Series			
	8. Exponential and Logarithmic. Equations and Inequalities	0	6	
8.1	Exponential Function, Equations and Inequalities			
8.2	Logarithmic Function, Equations and Inequalities			
	9. Geometry	0	6	
9.1	Proportional Segments. Angles			
9.2	Triangle			
9.3	Quadrangle			
9.4	Circle			
	10. Calculus	0	10	
10.1	Functions, Inverse Functions, Curve Sketching			

10.2	Limits			
10.3	Continuous and Discontinuous Functions			
10.4	Differentiation and Derivatives			
10.5	Basic Applications			
	Total:	**0**	**60**	

III. FORMS OF CONTROL:

No. by row	TYPE AND FORM OF CONTROL	№	extracurricular, h.
1.	**Midterm control**		
1.1.	Course Project / Term Homework	**1**	**20**
1.2.	Tests	**2**	**20**
	Total midterm control:	**3**	**40**
2.	**Final term control**		
2.1.	Examination (test)	**1**	**32**
	Total final term control:	**1**	**32**
	Total for all types of control:	**4**	**72**

IV. LITERATURE

REQUIRED (BASIC) LITERATURE:

1. **Barnett**, Raymond A. et al. *College Mathematics for Business, Economics*, Life Sciences and Social Sciences, Pearson, 2011.

2. **Wainwright**, K. et al. *Fundamental Methods of Mathematical Economics,* , McGraw-Hill Education; 4-th edition (October 2004).

RECOMMENDED (ADDITIONAL) LITERATURE:

1. **Simon**, Carl P. et al. *Mathematics for Economists*, Norton, 1994.