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**Federal State Autonomous Educational Institution of Higher Education  
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA  
RUDN University**

**Agrarian and Technological Institute**

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educational division (faculty/institute/academy) as higher education programme developer

**COURSE SYLLABUS**

Maths

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course title

**Recommended by the Didactic Council for the Education Field of:**

36.05.01 Veterinary

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field of studies / speciality code and title

**The course instruction is implemented within the professional education programme of higher education:**

Veterinary

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higher education programme profile/specialisation title

## 1. GOALS AND OBJECTIVES OF THE COURSE

The aim of mastering the course "**Maths**" is to familiarize students with the fundamental concepts of the course "Mathematics", which includes sections: elements of linear algebra, elements of analytical geometry, mathematical analysis.

## 2. REQUIREMENTS FOR LEARNING OUTCOMES

The implementation of the course "**Maths**" is aimed at creating the following competencies (parts of competencies) for students:

*Table 2.1. List of competencies formed by students during the development of the course (results of the development of the course)*

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Indicators of competence accomplishment (within the course)</b>
GC-1	Is able to critically analyze problem situations based on a systematic approach, to develop a strategy of action	GC-1.1 Analyzes the task, highlighting its basic components;
		GC-1.2 Identifies and ranks the information required for the task;
		GC-1.3 Searches for information to solve a given problem using various types of queries;
GC-12	The ability to search for the right sources of information and data, to perceive, analyze, remember and transmit information using digital tools, as well as using algorithms when working with data obtained from various sources to effectively use the information to solve problems; to assess information, its reliability, to build logical conclusions on the basis of incoming information and data.	GC-12.1 Searches for the right sources of information and data, perceives, analyzes, remembers and communicates information using digital tools, and using algorithms when working with data obtained from various sources in order to effectively use the information to solve problems;
GPC-4	Is able to use in professional activity methods to solve problems using modern equipment in the development of new technologies and use modern professional methodology to conduct experimental research and interpretation of the results	GPC-4.1 Has the conceptual and methodological apparatus of the basic natural sciences at a level sufficient for full professional activity at the modern level
		GPC-4.2 Knows how to solve problems using modern equipment

## 3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course "**Maths**" refers to the mandatory part of block B1 of the Educational Program of Higher Education.

As part of the Educational Program of Higher Education, students also master other courses and /or practices that contribute to achieving the planned results of mastering the course "**Maths**".

*Table 3.1. List of Higher Education Program components courses that contribute to expected learning outcomes*

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Previous courses/modules, internships*</b>	<b>Subsequent courses/modules, internships*</b>
GC-1	Is able to critically analyze problem situations based on a systematic approach, to develop a strategy of action	Computer science	Interdisciplinary module Study practice Preparation for and passing the state exam
GC-12	The ability to search for the right sources of information and data, to perceive, analyze, remember and transmit information using digital tools, as well as using algorithms when working with data obtained from various sources to effectively use the information to solve problems; to assess information, its reliability, to build logical conclusions on the basis of incoming information and data.		Study practice Preparation for and passing the state exam
GPC-4	Is able to use in professional activity methods to solve problems using modern equipment in the development of new technologies and use modern professional methodology to	Inorganic and analytical chemistry Organic chemistry Biological physics Physical and Colloidal Chemistry Biological chemistry	Immunology Laboratory diagnostics of infectious and invasive diseases Veterinary and industrial laboratories with design basics Study practice Clinical internship Industrial practice

	conduct experimental research and interpretation of the results		Academic research practice with the preparation of a scientific qualification project Preparation for and passing the state exam
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#### 4. COURSE WORKLOAD AND TRAINING ACTIVITIES

Course workload of the course "Maths" is 2 credits.

Table 4.1. Types of academic activities during the period of the HE program mastering for *full-time* study

Types of academic activities		HOURS	Semesters				
			1	-	-	-	
Contact academic hours		17	17	-	-	-	
including							
Lectures		-	-	-	-	-	
Lab work		-	-	-	-	-	
Seminars (workshops/tutorials)		17	17	-	-	-	
Self-study		37	37	-	-	-	
Evaluation and assessment (exam/pass/fail grading)		18	18	-	-	-	
Course workload		Academic hour	72	72	-	-	-
		Credit unit	2	2	-	-	-

#### 5. COURSE CONTENTS

Table 5.1 Content of the course (module) by type of academic work

Course module title	Course module contents (topics)	Academic activities types
Module 1: Analytic geometry: straight line and curves of the second order	Topic 1.1. The simplest tasks. Different types of equations of a straight line Topic 1.2. Curves of the second order	S
Module 2: Basics of mathematical analysis	Topic 2.1. Functions: basic definitions and concepts. Function graphs. Review of basic elementary functions. Topic 2.2. Numerical sequences. The limit of the numerical sequence. Functions: limit and continuity Topic 2.3. Function differentiation. Investigation of functions with the help of derivatives. Topic 2.4. Integration of functions. Definite Integral Application	S

#### 6. COURSE EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Material and technical support of the course

<i>Classroom for Academic Activity Type</i>	<i>Equipping the classroom</i>	<b>Specialized educational/laboratory equipment, software and materials for the development of the course (if necessary)</b>
Seminary	An auditorium for conducting seminar-type classes, group and individual consultations, ongoing monitoring and interim certification, equipped with a set of specialized furniture and multimedia presentation equipment.	-
Self-studies	An auditorium for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to an electronic information and educational environment.	-

## 7. RESOURCES RECOMMENDED FOR COURSE STUDIES

### *Main readings:*

1. Mikheev V.I., Pavlyuchenko Yu.V. - Higher mathematics. - M.: FIZMATLIT, 2004 and 2007.
2. A short course in higher mathematics for chemical-biological and medical specialties. - M. FIZMATLIT, 2003.
3. Rekach F.V., Popov A.M. RUDN University, 2007, 2009. Lectures on higher mathematics. Ch.1,2

### *Additional Readings:*

1. Vygodsky M.Ya. Handbook of higher mathematics. - M.: FIZMATLIT, 2004. *Internet sources*

1. Electronic libraries (EL) of RUDN University and other institutions, to which university students have access on the basis of concluded agreements:

- RUDN Electronic Library System (RUDN ELS) <http://lib.rudn.ru/MegaPro/Web>
- EL "University Library Online" <http://www.biblioclub.ru>
- EL "Yurayt" <http://www.biblio-online.ru>
- EL "Student Consultant" [www.studentlibrary.ru](http://www.studentlibrary.ru)
- EL "Lan" <http://e.lanbook.com/>
- EL "Trinity Bridge"

2. *Databases and search engines:*

- electronic foundation of legal and normative-technical documentation <http://docs.cntd.ru/>
- Yandex search engine [https:// www .yandex.ru/](https://www.yandex.ru/)
- Google search engine <https://www.google.ru/>
- Scopus abstract database <http://www.elsevierscience.ru/products/scopus/>

Educational and methodological materials for independent work of students during the development of the course/ module\*:

1. A course of lectures on the course "**Maths**".
2. Seminary workshop on the course "**Maths**".

\* - The training toolkit and guidelines for the internship are placed on the internship page in the university telecommunication training and information system under the set procedure.

## **8. ASSESSMENT TOOLKIT AND GRADING SYSTEM\* FOR EVALUATION OF STUDENTS' COMPETENCES LEVEL AS COURSE RESULTS**

The assessment toolkit and the grading system\* to evaluate the level of competences (competences in part) formation as the course results are specified in the Appendix to the course syllabus.

\* The assessment toolkit and the grading system are formed on the basis of the requirements of the relevant local normative act of RUDN University (regulations / order).

### **DEVELOPER:**

Assistant Professor at the Mathematical Institute

Position, Basic curriculum

Signature

Hassan N.Sh

Full name.

### **HEAD OF EDUCATIONAL DEPARTMENT:**

S. M. Nikolov Mathematical Institute

Name Basic Curriculum

Signature

Muravnik A.B.

Full name.

### **HEAD OF HIGHER EDUCATION PROGRAMME:**

Director of the Department of Veterinary Medicine

Position, Basic curriculum

Signature

Vatnikov Yu.A.

Full name