

Документ подписан простой электронной подписью  
Информация о владельце:  
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**Federal State Autonomous Educational Institution of Higher Education  
Peoples' Friendship University of Russia named after Patrice Lumumba  
RUDN University**

**Agrarian and Technological Institute**

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

**COURSE SYLLABUS**

**Immunology**

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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. COURSE GOAL(s)

The goal of the course «**Immunology**» is to form students' modern knowledge of fundamental and applied immunology, the formation of students' practical skills in using the achievements of immunology in working with animals and in clinical and research laboratories.

## 2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course (module) «**Immunology**» is aimed at the development of the following competences /competences in part:

*Table 2.1. List of competences that students acquire through the course study*

Competence code	Competence descriptor	Competence formation indicators (within this course)
GPC-4	Ability to use methods for solving professional tasks with modern equipment when developing new technologies and to apply modern professional methodology for conducting experimental research and interpreting its results.	GPC-4.1. Possesses the conceptual and methodological apparatus of basic natural sciences sufficient for professional activity at a modern level
		GPC-4.3. Is ready to apply modern methodology in the development and implementation of experimental research;
		GPC-4.4. Uses modern professional methodology in the interpretation of research results.

## 3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course refers to the core/variable/elective\* component of (B1) block of the higher educational programme curriculum.

Within the higher education programme students also master other (modules) and / or internships that contribute to the achievement of the expected learning outcomes as results of the course study.

*Table 3.1. The list of the higher education programme components/disciplines that contribute to the achievement of the expected learning outcomes as the course study results*

Competence code	Competence descriptor	Previous courses/modules*	Subsequent courses/modules*
GPC-4	Ability to use methods for solving professional tasks with modern equipment when developing new technologies and to apply modern professional methodology for conducting experimental research and interpreting its results.	Inorganic and Analytical Chemistry Organic Chemistry Biology with Basic Ecology Biophysics Physical and Colloidal Chemistry Biological Chemistry	Educational Practice Clinical Industrial Practice

#### 4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course is 2 credits (72 academic hours).

*Table 4.1. Types of academic activities during the periods of higher education programme mastering (full-time training)*

Type of academic activities		Total academic hours	Semesters/training modules			
			6	-	-	-
<i>Contact academic hours</i>		34	34	-	-	-
including:						
Lectures (LC)		17	17	-	-	-
Lab work (LW)		-	-	-	-	-
Seminars (workshops/tutorials) (S)		17	17	-	-	-
<i>Self-studies</i>		29	29	-	-	-
<i>Evaluation and assessment (exam/passing/failing grade)</i>		9	9	-	-	-
<b>Course workload</b>	academic hours	<b>72</b>	<b>72</b>	-	-	-
	credits	<b>2</b>	<b>2</b>	-	-	-

#### 5. COURSE CONTENTS

*Table 5.1. Course contents and academic activities types*

Course module title	Course module contents (topics)	Academic activities types
Module 1. General immunology	Topic 1.1. Introduction. History of immunology. Mechanisms of innate immunity.	Lectures, Seminars
	Topic 1.2. Organs, tissues and cells of the immune system.	Lectures, Seminars
	Topic 1.3. Effector mechanisms of immunity.	Lectures, Seminars
Module 2. Clinical immunology	Topic 2.1. Immune response. Mechanisms of hypersensitivity. Autoimmunity.	Lectures, Seminars
	Topic 2.2. The immune system of ontogenesis and carcinogenesis. Immunodeficiency.	Lectures, Seminars
	Topic 2.3. Immunotherapy.	Lectures, Seminars

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

*Table 6.1. Classroom equipment and technology support requirements*

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
Lecture	A lecture hall for lecture-type classes, equipped with a set of specialised furniture; board	

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
	(screen) and technical means of multimedia presentations.	
Seminar	A classroom for conducting seminars, group and individual consultations, current and mid-term assessment; equipped with a set of specialised furniture and technical means for multimedia presentations.	
Self-studies	A classroom for independent work of students (can be used for seminars and consultations), equipped with a set of specialised furniture and computers with access to the electronic information and educational environment.	

## 7. RESOURCES RECOMMENDED FOR COURSE STUDY

### *Main readings:*

1. Skopichev V.G. Morpho-physiological and immunological aspects of animal husbandry : a textbook for bachelors / V.G. Skopichev, N.N. Maksimiyuk. - Electronic text data. - St. Petersburg : Quadro, 2020. - 560 p.
2. Sarukhanova L. E. General microbiology, virology and applied immunology: textbook / Sarukhanova L. E., Volina E. G. Yashina N. V. – 3rd ed., ispr. - M.: RUDN, 2020, 2022. – 172 p.

### *Additional readings:*

1. Krishtoforova B.V., Lemeshchenko V.In, Practical morphology of animals with the basics of immunology – M.: Lan, 2016 – 164c. <https://e.lanbook.com/book/72987>
2. Gosmanov R.G., Ibragimova A.I. Microbiology and immunology / Galiullin A.K. – M.: Lan, 2013 – 240s. <https://e.lanbook.com/book/12976>
3. Veterinary immunology = Introduction To Veterinary Immunology : an educational and methodical manual / Yu.A. Vatnikov, V.M. Byakhova, E.V. Kulikov, A.A. Gazin. - Book in English; electronic text data. - Moscow : RUDN, 2020. - 105 p.

### *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/>

*Training toolkit for self- studies to master the course \*:*

1. The set of lectures on the course «**Immunology**».
2. The laboratory workshop (if any) on the course «**Immunology**».

\* The training toolkit for self- studies to master the course is placed on the course page in the university telecommunication training and information system under the set procedure.

**DEVELOPER:**

Associate Professor of the Department of Veterinary  
Medicine

Position, Basic curriculum

Signature

Krotova E.A.

Full name.

**HEAD OF EDUCATIONAL DEPARTMENT:**

Department of Veterinary Medicine

Name Basic Curriculum

Signature

Vatnikov Yu.A.

Full name.

**HEAD OF**

**HIGHER EDUCATION PROGRAMME:**

Director of the Department of Veterinary Medicine

Position, Basic curriculum

Signature

Vatnikov Yu.A.

Full name