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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**

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Immunology

course title

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

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36.05.01 Veterinary

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 "**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

The implementation of the course "**Immunology**" 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)*

Competence code	Competence descriptor	Indicators of competence accomplishment (within the course)
GPC-4	Able to use problem-solving methods with modern equipment in professional activities for the development of new technologies and to apply modern professional methodology for conducting experimental research and interpreting its results.	GPC-4.1 Possesses the conceptual and methodological framework of basic natural sciences at a level sufficient for full professional activity at the modern standard.
		GPC-4.3 Ready to use modern methodology in the development and conduct of experimental research.
		GPC-4.4 Applies modern professional methodology when interpreting research results.

## 3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course "**Immunology**" 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 "**Immunology**".

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

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
GPC-4	Able to use problem-solving methods with modern equipment in professional activities for	Maths / Математика  Inorganic and	Base component / Базовая компонента Educational Practice

	the development of new technologies and to apply modern professional methodology for conducting experimental research and interpreting its results.	<p>Analytical Chemistry / Неорганическая и аналитическая химия</p> <p>Organic Chemistry / Органическая химия</p> <p>Biophysics / Биологическая физика</p> <p>Physical and Colloidal Chemistry / Физическая и коллоидная химия</p> <p>Biological Chemistry / Биологическая химия</p>	<p>/ Учебная практика</p> <p>Variable component / Вариативная компонента</p> <p>Clinical Industrial Practice / Клиническая производственная практика</p> <p>Clinical Internship Industrial Research Practice / Производственно-исследовательская практика</p> <p>Preparation for Passing and Passing the State Exam / Подготовка к сдаче и сдача государственного экзамена</p> <p>Preparing and Passing the State Exam / Подготовка и сдача государственного экзамена</p> <p>Design, Preparation for Defense Procedure and Defense of the Graduation Thesis / Оформление, подготовка к процедуре защиты и защита выпускной квалификационной работы</p>
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#### 4. COURSE WORKLOAD AND TRAINING ACTIVITIES

Course workload of the course "**Immunology** " 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			
		6	-	-	-
Contact academic hours	34	34	-	-	-

including						
Lectures		17	17	-	-	-
Lab work		-	-	-	-	-
Seminars (workshops/tutorials)		17	17	-	-	-
Self-study		29	29	-	-	-
Evaluation and assessment (exam/pass/fail grading)		9	9	-	-	-
<b>Course workload</b>	Academic hour	<b>72</b>	<b>72</b>	-	-	-
	Credit unit	<b>2</b>	<b>2</b>	-	-	-

## 5. COURSE CONTENTS

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

Modules	Content of the modules (topics)	Types of academic activities
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. 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>
Lecture	An auditorium for conducting lecture-type classes, equipped with a set of specialized furniture; a board (screen) and technical means of multimedia presentations.	- <i>Information stands.</i> - <i>Microscopes.</i>

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.	- <i>Information stands.</i> - <i>Microscopes.</i>
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. Skopichev V.G. Morpho-physiological and immunological aspects of animal husbandry : a textbook for bachelors / V.G. Skopichev, N.N. Maksimuk. - 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/>

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

1. A course of lectures on the course "**Immunology**".
2. Seminars workshop on the course "**Immunology**".

\* - 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:**

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