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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**

**Instrumental diagnostic methods**

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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:**

**36.05.01 Veterinary**

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higher education programme profile/specialisation title

## 1. GOALS AND OBJECTIVES OF THE COURSE

The aim of mastering the course "**Instrumental diagnostic methods**" is the formation of professional knowledge and skills for use in veterinary medicine of medical devices and methods designed for the diagnosis and differential diagnosis of diseases of various etiologies in animals. This is necessary for the veterinarian to correctly apply the methods and correctly interpret the results obtained, to scientifically substantiate his actions and decisions taken for the appointment and treatment of animals.

## 2. REQUIREMENTS FOR LEARNING OUTCOMES

The implementation of the course "**Instrumental diagnostic methods**" 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-7	Is able to understand the principles of modern information technologies and use them to solve problems of professional activity	GPC-7.3 Knows how to use modern medical diagnostic and treatment equipment with software
PC-5	Ability and readiness to plan and conduct necessary instrumental diagnostics of the patient's condition	PC-5.1 Knows about modern methods of instrumental diagnostics, peculiarities of their application, indications, possible complications and contraindications for their use.
		PC-5.2 Selects the necessary and sufficient set of instrumental diagnostic methods to solve the problem.
		PC-5.3 He is able to conduct instrumental diagnosis of diseases in animals.
		PC-5.4 Interprets the results of the diagnosis and uses them to solve the problem.

## 3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course "**Instrumental diagnostic methods**" 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 "**Instrumental diagnostic methods**".

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-7	Is able to understand the principles of modern information technologies and use them to solve problems of professional activity		Study practice Clinical internship Industrial practice Academic research practice with the preparation of a scientific qualification project Preparation for and passing the state exam
PC-5	Ability and readiness to plan and conduct necessary instrumental diagnostics of the patient's condition	Animal anatomy	Anesthesiology, resuscitation and intensive care Dermatology Cardiology Endocrinology Nephrology Reconstructive surgery Veterinary ophthalmology Animal Dentistry Clinical internship Industrial practice Academic research practice with the preparation of a scientific qualification project Preparation for and passing the state exam

#### 4. COURSE WORKLOAD AND TRAINING ACTIVITIES

Course workload of the course "**Instrumental diagnostic methods**" 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	54	54	-	-	-
including					
Lectures	18	18	-	-	-

Lab work		36	36	-	-	-
Seminars (workshops/tutorials)		-	-	-	-	-
Self-study		8	8	-	-	-
Evaluation and assessment (exam/pass/fail grading)		10	10	-	-	-
<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*

<b>Modules</b>	<b>Content of the modules (topics)</b>	<b>Types of academic activities</b>
Module 1. Introduction to instrumental diagnostics. X-ray diagnostics.	Topic 1.1 Introduction to instrumental diagnostics.	Lectures, Lab work.
	Topic 1.2 X-ray diagnostics.	Lectures, Lab work.
Module 2. Ultrasound examination.	Topic 2.1 Ultrasound examination.	Lectures, Lab work.
Module 3. Computer and magnetic resonance imaging.	Topic 3.1 Computed tomography.	Lectures, Lab work.
	Topic 3.2 Magnetic resonance imaging.	Lectures, Lab work.
Module 4. Electrocardiography, endoscopy and biopsy.	Topic 4.1 Electrocardiography.	Lectures, Lab work.
	Topic 4.2 Endoscopy.	Lectures, Lab work.
	Topic 4.3 Biopsy.	Lectures, Lab work.

## 6. COURSE EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

*Table 6.1. Material and technical support of the course*

<b><i>Classroom for Academic Activity Type</i></b>	<b><i>Equipping the classroom</i></b>	<b>Specialized educational/laboratory equipment, software and materials for the development of the course (if necessary)</b>
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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>Portable ultrasound machine.</i> - <i>Endoscopic equipment.</i> - <i>Electrokimograph.</i> - <i>Biochemical analyzer of blood, urine and hematological analyzer of blood (ILAB 650, PCE 90VET, etc.)</i>
Laboratory	An auditorium for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment.	- <i>Portable ultrasound machine.</i> - <i>Endoscopic equipment.</i> - <i>Electrokimograph.</i> - <i>Biochemical analyzer of blood, urine and hematological analyzer of blood (ILAB 650, PCE 90VET, etc.)</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. Ivanov A.A. Clinical laboratory diagnostics [Electronic resource] : Textbook / A.A. Ivanov. – St. Petersburg : Publishing House "Lan", 2017. - 432 p. [http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=465014&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=465014&idb=0)
2. Organization of veterinary business 2019.-300p. <https://e.lanbook.com/book/142440>

### *Additional Readings:*

1. Ivanov V.P. Veterinary clinical radiology – St. Petersburg: Publishing House "Lan", 2014. – 624p. <https://e.lanbook.com/book/52618>
2. Kalyuzhny I.I., Shcherbakov G.G. Clinical gastroenterology of animals - St. Petersburg: Publishing House "Lan", 2015. – 448p. <https://e.lanbook.com/book/61362>
3. Workshop on clinical diagnostics with radiology Voronin E.S. et al.; ed. Voronina E.S., Snoz G. V. - M. : INFRA-M, 2014 - 335 p.
4. Lukinskaya N.M. Clinical diagnostics with radiology ; Ministry of Agriculture of the Russian Federation, FGOU VPO VGMHA, Vologda ; Dairy : IC VGMHA, 2011 - 10 p.
5. Ultrasound diagnostics of internal diseases of small pets/ Shabanov A.M. et al.; ed. Rakitskoy V.V. - M. : KolosS, 2005 - 135 p.
6. Blut Edward I., Benson Carol B., Ralls Philip W. Ultrasound diagnostics. Practical solution of clinical problems. - M.: Medical literature, 2014. - 176 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/>
- Google search engine <https://www.google.ru/>
- Scopus abstract database <http://www.elsevier.com/locate/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 "**Instrumental diagnostic methods**".
2. Laboratory workshop on the course "**Instrumental diagnostic methods**".

\* - 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:**

Professor of the Department of Veterinary Medicine

Position, Basic curriculum

Signature

Vatnikov Yu.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