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

**Agrarian and Technological Institute**

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

# COURSE SYLLABUS

Clinical Diagnostics

course title

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

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

higher education programme profile/specialisation title

**2025**

## 1. GOALS AND OBJECTIVES OF THE COURSE

The aim of mastering the course "**Clinical diagnostics**" is to form fundamental and professional knowledge about the diagnosis of changes in physiological processes and functions in the body of mammals and birds, about their qualitative originality in the body of productive farm animals, domestic, laboratory and exotic animals, necessary for a veterinarian to scientifically substantiate measures related to the diagnosis and subsequent therapy of diseases. The aim is to create optimal conditions for keeping, feeding and exploiting animals, preventing diseases, assessing health, the nature and degree of violations of the activity of organs and the body, determining ways and means of influencing the body in order to correct the activity of organs.

## 2. REQUIREMENTS FOR LEARNING OUTCOMES

The implementation of the course "**Clinical diagnostics**" 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 discipline)*

| **Competence code** | **Competence descriptor** | **Indicators of competence accomplishment** (within the discipline) |
|---|---|---|
| GPC-1 | Able to determine the biological status and normative clinical parameters of the organs and systems of animal organisms. | GPC-1.3 Able to determine the main functional indicators of individual body systems and draw conclusions about deviations from normative values. |
| | | GPC-1.4 Possesses skills in collecting biological fluid and tissue samples for research, conducting laboratory studies, and interpreting research results. |
| PC-1 | Ability to collect anamnesis of the life and health of an animal for further diagnosis and planning of treatment and preventive measures. | PC-1.1 Collects anamnesis regarding the animal's life, scheduled vaccinations, deworming, and other preventive treatments. |
| | | PC-1.2 Collects information about past diseases, surgical interventions, current chronic diseases, and ongoing therapies. |
| | | PC-1.3 Collects information about changes in the animal's condition during illness, performed diagnostic and therapeutic measures, used medications, and physiotherapy methods. |
| PC-2 | Ability to perform a complete initial clinical examination of an animal for establishing a preliminary clinical diagnosis | PC-2.2 Identifies signs (symptoms) of deviations from normal function and recognizes standard symptom combinations (syndromes). |

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| | (diagnoses) and conduct follow-up examinations to monitor the patient's condition. | PC-2.3 Records examination results in the patient's chart and other medical documentation. |

## 3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course "**Clinical diagnostics**" 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 disciplines and /or practices that contribute to achieving the planned results of mastering the course "**Clinical diagnostics**".

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

| **Competence code** | **Competence descriptor** | **Previous courses/modules, internships*** | **Subsequent courses/modules, internships*** |
|---|---|---|---|
| GPC-1 | Able to determine the biological status and normative clinical parameters of the organs and systems of animal organisms. | | Operative Surgery with Topographic Anatomy / Оперативная хирургия с топографической анатомией<br><br>Laboratory Diagnostics with Elements of Artificial Intelligence Technology / Лабораторная диагностика с элементами технологии искусственного интеллекта<br><br>Veterinary Assistant Skills / Навыки ассистента ветеринарного врача<br><br>Base component / |

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|---|---|---|---|
| | | | Базовая компонента<br><br>Educational Practice / Учебная практика<br><br>Variable component / Вариативная компонента<br><br>Clinical Industrial Practice / Клиническая производственная практика<br><br>Clinical Internship<br><br>Industrial Research Practice / Производственно-исследовательская практика<br><br>Preparation for Passing and Passing the State Exam / Подготовка к сдаче и сдача государственного экзамена<br><br>Preparing and Passing the State Exam / Подготовка и сдача государственного экзамена<br><br>Design, Preparation for Defense Procedure and Defense of the Graduation Thesis / Оформление, подготовка к процедуре защиты и защита выпускной квалификационной работы |
| PC-1 | Ability to collect anamnesis of the life and | | Fish Pathology and Aquaculture / |

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| | health of an animal for further diagnosis and planning of treatment and preventive measures. | | Патология рыб и аквакультура<br><br>Equine Diseases / Болезни лошадей<br><br>Diseases of Farm Animals / Болезни продуктивных животных<br><br>Small Animal Diseases / Болезни мелких домашних животных<br><br>Bee Diseases and Entomophages / Болезни пчел и энтомофаги<br><br>Exotic Animal Diseases / Болезни экзотических животных<br><br>Base component / Базовая компонента<br><br>Educational Practice / Учебная практика<br><br>Variable component / Вариативная компонента<br><br>Clinical Industrial Practice / Клиническая производственная практика<br><br>Clinical Internship<br><br>Industrial Research Practice / Производственно-исследовательская |

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| | | | практика<br><br>Preparation for Passing and Passing the State Exam / Подготовка к сдаче и сдача государственного экзамена<br><br>Preparing and Passing the State Exam / Подготовка и сдача государственного экзамена<br><br>Design, Preparation for Defense Procedure and Defense of the Graduation Thesis / Оформление, подготовка к процедуре защиты и защита выпускной квалификационной работы |
| PC-2 | Ability to perform a complete initial clinical examination of an animal for establishing a preliminary clinical diagnosis (diagnoses) and conduct follow-up examinations to monitor the patient's condition | | Fish Pathology and Aquaculture / Патология рыб и аквакультура<br><br>Equine Diseases / Болезни лошадей<br><br>Diseases of Farm Animals / Болезни продуктивных животных<br><br>Small Animal Diseases / Болезни мелких домашних животных<br><br>Bee Diseases and Entomophages / Болезни пчел и энтомофаги |

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|---|---|---|---|
| | | | Exotic Animal Diseases / Болезни экзотических животных<br><br>Base component / Базовая компонента<br><br>Educational Practice / Учебная практика<br><br>Variable component / Вариативная компонента<br><br>Clinical Industrial Practice / Клиническая производственная практика<br><br>Clinical Internship<br><br>Industrial Research Practice / Производственно-исследовательская практика<br><br>Preparation for Passing and Passing the State Exam / Подготовка к сдаче и сдача государственного экзамена<br><br>Preparing and Passing the State Exam / Подготовка и сдача государственного экзамена<br><br>Design, Preparation for Defense Procedure and Defense of the Graduation Thesis / Оформление, подготовка к |

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| | | | процедуре защиты и защита выпускной квалификационной работы |

## 4. COURSE WORKLOAD AND TRAINING ACTIVITIES

Course workload of the course " **Clinical diagnostics** " is 7 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** | | | |
|---|---|---|---|---|---|---|
| | | | **5** | **6** | **-** | **-** |
| Contact academic hours | | 102 | 51 | 51 | - | - |
| including | | | | | | |
| Lectures | | 34 | 17 | 17 | - | - |
| Lab work | | 68 | 34 | 34 | - | - |
| Seminars (workshops/tutorials) | | - | | | - | - |
| Self-study | | 105 | 66 | 39 | - | - |
| Evaluation and assessment (exam/pass/fail grading) | | 45 | 27 | 18 | - | - |
| **Course workload** | Academic hour | **252** | **144** | **108** | **-** | **-** |
| | Credit unit | **7** | **4** | **3** | **-** | **-** |

## 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 clinical diagnosis. | Topic 1.1 Introduction. | Lectures, Lab work. |
| | Topic 1.2 Biogeocenotic diagnostics. | Lectures, Lab work. |
| Module 2. Private clinical diagnostics. Cardiovascular and respiratory systems. | Topic 2. 1 Cardiovascular system. | Lectures, Lab work. |
| | Topic 2.2 Respiratory system. | Lectures, Lab work. |
| Module 3. Private clinical diagnostics. Organ systems. | Topic 3.1 The digestive system. | Lectures, Lab work. |
| | Topic 3.2 Urinary system. | Lectures, Lab work. |
| | Topic 3.3 The nervous system. | Lectures, Lab |

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| | | work. |
| | Topic 3.4 Fundamentals of clinical biochemistry. | Lectures, Lab work. |
| | Topic 3.5 Endocrine system. | Lectures, Lab work. |

## 6. COURSE EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

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

| ***Classroom for Academic Activity Type*** | ***Equipping the classroom*** | **Specialized educational/laboratory equipment, software and materials for the development of the course** (if necessary) |
|---|---|---|
| Lecture | An auditorium for conducting lecture-type classes, equipped with a set of specialized furniture; a board (screen) and technical means of multimedia presentations. | *- Portable ultrasound machine.*<br>*- Endoscopic equipment.*<br>*- Biochemical analyzer of blood, urine and hematological analyzer of blood (ILAB 650, PCE 90VET, etc.).*<br>*- Hemometers GS (Sali).*<br>*- Goryaev's counting chamber.*<br>*- Electrokimograph.*<br>*- Biological microscopes.*<br>*- Devices for determining the rate of erythrocyte sedimentation: Panchenkov capillaries.*<br>*- Registration capsule (set)*<br>*- Counter of shaped blood elements.*<br>*- Korotkov tonometer for measuring blood pressure*<br>*- Phonendoscope.*<br>*- Mixers (melangers) for counting leukocytes, erythrocytes*<br>*- A device for determining the Rh factor, blood groups* |
| Laboratory | An auditorium for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment. | *- Portable ultrasound machine.*<br>*- Endoscopic equipment.*<br>*- Biochemical analyzer of blood, urine and hematological analyzer of blood (ILAB 650, PCE 90VET, etc.).*<br>*- - Hemometer GS (Sali).*<br>*- Goryaev's counting chamber.*<br>*- Electrokimograph.*<br>*- Biological microscopes.*<br>*- Devices for determining the rate of erythrocyte sedimentation: Panchenkov capillaries.*<br>*- Registration capsule (set)* |

| | | |
|---|---|---|
| | | *- Counter of shaped blood elements.*<br>*- Korotkov tonometer for measuring blood pressure*<br>*- Phonendoscope.*<br>*- Mixers (melangers) for counting leukocytes, erythrocytes*<br>*- A device for determining the Rh factor, blood groups* |
| 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
2. Usha Boris Veniaminovich. Clinical diagnostics of internal non-infectious animal diseases / B.V. Usha, I.M. Belyakov, R.P. Pushkarev. - Electronic text data. - St. Petersburg : Quadro, 2020. - 487 p. : http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=487452&idb=0
3. Clinical diagnostics in veterinary medicine 2020.-161 p. https://e.lanbook.com/book/148538


*Additional Readings:*


1. Kalyuzhny I.I., Shcherbakov G.G. Clinical gastroenterology of animals / Yashin A.V., Barinov N.D., Derezina T.N. – M.: Lan, 2015 – 448s. https://e.lanbook.com/book/61362
2. Korobov A.V., Savinkov A.V., Vorobyev A.V., Savinkova M.V. Dictionary of veterinary terms on clinical diagnosis and internal non-infectious diseases. - 1-ed. ed. - St. Petersburg: Lan, 2007. - 320 p.
3. Clinical diagnostics of internal non-infectious animal diseases/Usha B.V., Belyakov I.M., Pushkarev R.P.-M., 2004.- 835 p.
4. Kamyshnikov, V. S. Pocket doctor's guide to laboratory diagnostics / V.S. Kamyshnikov. - M.: MEDpress-inform, 2014. - 400 p.
5. Medvedeva, M. Clinical veterinary laboratory diagnostics. Handbook for veterinarians / M. Medvedeva. - M.: Aquarium-Print, 2013. - 416 p.
6. Annikova L.V. CLINICAL DIAGNOSTICS. - Saratov: Saratov State Pedagogical University, 2016. - 114 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
- 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.elsevierscience.ru/products/scopus/

Educational and methodological materials for independent work of students during the development of the discipline/ module*:
1. A course of lectures on the course "**Clinical diagnostics**".
2. Laboratory workshop on the course "**Clinical diagnostics**".

* - 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 | | Karamyan A.S. |
|---|---|---|
| Position, Basic curriculum | Signature | Full name. |

**HEAD OF EDUCATIONAL DEPARTMENT:**

| Department of Veterinary Medicine | | Vatnikov Yu.A. |
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| Name Basic Curriculum | Signature | Full name. |

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