**Federal State Autonomous Educational Institution for Higher Education PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA**

**Agrarian and Technological Institute**

**WORKING COURSE SYLLABUS**

# Nephrology

**Recommended by the Methodological Council for the Education Field:**

**36.05.01 Veterinary medicine**

**2022**

## 1. GOALS AND OBJECTIVES OF THE DISCIPLINE

The aim of mastering the discipline "**Nephrology**" is to study and master the theoretical sections of nephrology, as well as to acquire in-depth knowledge on the diagnosis, treatment, prevention and rehabilitation of nephrological diseases.

## 2. REQUIREMENTS FOR THE RESULTS OF MASTERING THE DISCIPLINE

The development of the discipline "**Nephrology**" 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 discipline (results of the development of the discipline)*

| **Шифр** | **Компетенция** | **Индикаторы достижения компетенции** (в рамках данной дисциплины) |
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| GPC-2 | The ability to interpret and evaluate in professional activity the influence of natural, socio-economic, genetic and economic factors on the physiological state of the animal organism. | GPC-2.1 Has knowledge of the influence of natural, socio-economic, genetic and economic factors on the animal body. |
| | | GPC-2.2 He is able to establish the presence and reliability of cause-and-effect relationships between the effects of certain etiological factors on the animal's body and the development of diseases. |
| | | GPC-2.3 Possesses methods of preventive and curative correction of the effects of adverse environmental factors that can cause deterioration of animal health. |
| GPC -4 | The ability to use methods of solving problems using modern equipment in the development of new technologies in professional activity and to use modern professional methodology for conducting experimental research and interpreting their results. | GPC-4.1 Possesses the conceptual and methodological apparatus of basic natural sciences at a level sufficient for full-fledged professional activity at the modern level. |
| | | GPC-4.2 He knows the methods of solving problems using modern equipment. |
| | | GPC-4.3 He is ready to use modern methodology in the development and conduct of experimental research. |
| | | GPC-4.4 Uses modern professional methodology in interpreting research results. |
| GPC -5 | The ability to draw up special documentation, analyze the results of professional activity and submit accounting | GPC-5.1 Has the skills to search for the necessary forms of documentation on official websites and in specialized databases. |

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| | documents using specialized databases. | GPC-5.2 Possesses professional terminology and skills in filling out analytical and reporting documents of a professional orientation. |
| | | GPC-5.3 He is able to use specialized software to analyze the results of professional activity and compile accounting documentation. |
| GPC -7 | He is able to understand the principles of modern information technologies and use them to solve the tasks of professional activity. | GPC-7.1 Understands the principles of modern computer technology and telecommunications and is able to use them to solve professional problems; |
| | | GPC-7.2 Uses modern special software and specialized databases to solve professional tasks and perform official duties; |
| | | GPC-7.3 Has the skills to work on modern medical diagnostic and therapeutic equipment with software; |
| | | GPC-7.4 Uses specialized databases to solve professional problems in the field of diagnostics and treatment of animals of various species; |
| | | GPC-7.5 Uses geoinformation systems and software complexes when collecting and analyzing information related to the assessment of the spread of infectious diseases, epizootic situations, planning and evaluating the effectiveness of anti-epizootic measures. |
| PC -1 | The ability to collect anamnesis of life and disease of animals to identify the causes of diseases and their nature. | PC -1.1 He is able to collect an anamnesis of the animal's life and reflect this in the relevant service documentation. |
| | | PC-1.2 He is able to collect the anamnesis of the animal's disease and reflect it in the patient's medical history. |
| | | PC-1.3 He is able to identify possible causes of the disease in an animal, factors predisposing to the disease and concomitant conditions affecting the nature of the course of the disease and use this information when making a diagnosis. |
| PC -3 | Ability to develop animal research programs using special (instrumental) and laboratory methods. | PC-3.1 He is able to develop individual animal research programs, including the use of special (instrumental) and laboratory methods to detect deviations from the physiological norm of the state |

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| | | of a living organism, conduct differential diagnosis of the detected pathology or control the course of the disease and the effectiveness of the prescribed treatment. |
| | | PC-3.2 Capable of developing mass comprehensive animal research programs (medical examination programs) of animals, taking into account their type and purpose, both general and special. |
| PC -4 | The ability to conduct clinical studies of animals using special (instrumental) and laboratory methods to clarify the diagnosis. | PC-4.1 Able to conduct additional animal studies using laboratory methods to clarify the diagnosis. |
| | | PC-4.2 Able to conduct additional animal studies using special (instrumental) methods to clarify the diagnosis. |
| PC -5 | The ability to make a diagnosis based on the analysis of anamnesis data, general, special (instrumental) and laboratory research methods. | PC-5.1 He is able to diagnose patients of various types based on the analysis of anamnesis data, general, special (instrumental) and laboratory research methods. |
| | | PC -5.2 He is able to predict the risks of diseases based on anamnestic data, the results of general, special (instrumental) and laboratory studies. |
| PC -6 | The ability to develop a treatment plan for animals based on the established diagnosis and individual characteristics of animals. | PC-6.1 Able to develop a treatment plan for animals based on the established diagnosis and individual characteristics of animals. |
| | | PC-6.2 He is able to develop recommendations on therapeutic and preventive manipulations to prevent diseases, the high probability of which was revealed during the study of the patient. |
| | | PC-6.3 He is able to develop recommendations for carrying out preventive and curative measures based on the results of the examination of animals carried out as part of the medical examination. |
| PC -7 | The ability to choose the necessary drugs of chemical and biological nature for the treatment of animals, taking into account their combined pharmacological effect on the body. | PC -7.1 He is able to choose medicines of chemical and biological nature necessary for the treatment of animals, guided by the principles of evidence-based medicine, taking into account their combined pharmacological effect on the body. |
| | | PC-7.2 He is able to justify the |

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| | | prescription of a drug in a certain clinical case or the impossibility of using this drug in the situation under consideration. |
| | | PC-7.3 He is able to calculate the dose, frequency and duration of the course of application of the drug to the patient, taking into account the form of release and the characteristics of the administration of the drug to the patient. |
| | | PC-7.4 He is able to take into account drug interactions when prescribing a course of treatment to an animal already receiving medications and biologically active additives due to the presence of diseases identified earlier. |
| | | PC-7.5 He is able to take into account economic, species and age characteristics, as well as the results of laboratory studies of the patient when choosing drugs for the treatment of the patient. |
| PC -8 | Ability to choose methods of non-drug therapy, including physiotherapy methods for the treatment of animals. | PC-8.1 He is able to choose and justify his choice of methods of non-drug therapy, including physiotherapy methods, for the treatment of animals; |
| | | PC-8.2 He is able to evaluate the effectiveness of the chosen method in the treatment of the patient and, if necessary, adjust the treatment method or change the chosen method to another one. |
| PC -9 | The ability to carry out therapeutic, including physiotherapy procedures using special equipment in compliance with safety rules. | PC-9.1 Able to carry out therapeutic, including physiotherapy, procedures using special equipment in compliance with safety rules; |
| | | PC -9.2 He is able to take into account the species, age and individual characteristics of animals undergoing treatment using special equipment, choose acceptable methods of fixing the patient during the procedure, the conditions of the procedures and their duration. |
| PC -10 | The ability to determine the need for the use of surgical methods in the treatment of animals. | PC-10.1 Able to determine the need for the use of surgical methods in the treatment of animals; |
| | | PC-10.2 Able to choose the optimal surgical method for the patient, taking into account the external conditions and the status of the patient's body, and if necessary, several manipulations - their |

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| | | order and time distribution; |
| | | PC-10.3 He is able to take into account the risks and possible complications accompanying surgical interventions and take measures to prevent them. |
| PC -11 | Ability to develop a surgical operation plan, including the choice of analgesia method | PC-11.1 Able to develop a surgical operation plan; |
| | | PC-11.2 He is able to choose and justify the optimal variant of anesthesia of the patient during surgery and in the postoperative period. |
| PC -13 | Ability to develop recommendations for special feeding of sick animals for therapeutic purposes. | PC-13.1 He is able to justify the appointment of special feeding to an animal for therapeutic purposes in various diseases; |
| | | PC-13.2 He is able to recommend the approximate composition of therapeutic diets, the desired ratio of nutrients, the presence of special additives and components that enhance the therapeutic effect of the diet; |
| | | PC-13.3 He is able to use special programs and databases for the selection of industrial therapeutic diets and dietary supplements, as well as for the compilation of individual therapeutic diets for animals of various species. |
| PC -14 | The ability to conduct repeated examinations and studies of animals to assess the effectiveness and safety of the prescribed treatment and adjust the treatment plan of animals (if necessary) based on the results of the evaluation of the effectiveness of treatment. | PC-14.1 He is able to develop a plan of repeated studies necessary and sufficient to assess the predicted changes in the patient's health. |
| | | PC-14.2 Able to conduct a repeated clinical examination, taking into account the specifics of diseases previously diagnosed in the patient. |
| | | PC-14.3 Able to carry out the necessary repeated instrumental and laboratory tests. |
| | | PC-14.4 He is able to analyze the identified changes, evaluate the effectiveness of the treatment and, if necessary, correct the prescribed course of treatment. |
| PC -18 | The ability to draw up a plan for the medical examination of animals, taking into account their types and purpose, to | PC-18.1 He is able to make a plan for the medical examination of animals, general or specialized, taking into account their types and purpose |

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| | conduct medical examinations, to develop recommendations for carrying out preventive and curative measures based on the results of the examination of animals conducted as part of the medical examination | PC-18.2 He is able to organize and conduct medical examination according to the drawn up plan |
| | | PC-18.3 He is able, based on the results of medical examination, to give recommendations on the implementation of therapeutic and preventive and curative measures aimed at improving the health of a group of animals |
| PC -19 | The ability to perform post-mortem diagnostic examination of animals in order to establish pathological processes, diseases, causes of death. | PC-19.1 Able to conduct a general examination of animal corpses before autopsy. |
| | | PC-19.2 He is capable of performing autopsy of animal corpses using special tools and compliance with safety requirements. |
| | | PC -19.3 He is able to establish the cause of death and a pathoanatomic diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases. |
| | | PC-19.4 He is able to formalize the results of a postmortem diagnostic examination of an animal in the autopsy protocol. |
| PC -24 | Ability and willingness to promote veterinary knowledge, including in the field of prevention of animal diseases. | PC-24.1 He is able to set goals in the field of veterinary knowledge promotion, plan the strategy and tactics of upcoming events. |
| | | PC-24.2 He is able to use computer and telecommunication facilities for the preparation and demonstration of materials used in the process of promoting veterinary knowledge. |
| | | PC-24.3 He is able to conduct conversations, lectures, seminars for employees of the organization in order to explain the principles of work on the prevention of animal diseases. |

## 3. COURSE IN HIGHER EDUCATION

The discipline "**Nephrology**" belongs to the part formed by the participants of educational relations of the 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 discipline "**Nephrology**".

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

| **Competence code** | **Competence** | **Previous Disciplines (Modules)** | **Subsequent Disciplines (Modules)** |
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| GPC-2 | The ability to interpret and evaluate in professional activity the influence of natural, socio-economic, genetic and economic factors on the physiological state of the animal organism. | Biology with the basics of ecology<br>Veterinary genetics<br>Veterinary microbiology and mycology<br>Virology and biotechnology<br>Physiology and ethology of animals<br>Breeding with the basics of private animal husbandry<br>Animal health and welfare<br>Pathological physiology<br>Veterinary Radiobiology<br>Pathological anatomy<br>Instrumental diagnostic methods<br>Toxicology<br>Obstetrics, gynecology and andrology<br>Internal non-infectious diseases<br>General surgery<br>Private Veterinary surgery<br>Parasitology and invasive diseases<br>Epizootology and infectious diseases<br>Forensic veterinary examination and autopsy of animals<br>Immunology<br>General and veterinary ecology | Endocrinology<br>Nephrology<br>Veterinary Ophthalmology<br>Animal Dentistry |

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| | | Veterinary sanitation<br>Forage plants<br>Zoopsychology<br>Animal Health<br>Diseases of horses<br>Diseases of productive animals<br>Diseases of small pets<br>Diseases of small pets<br>Bee diseases and entomophages<br>Fish pathology and aquaculture<br>Diseases of exotic animals<br>Anesthesiology, intensive care and intensive care<br>Dermatology | |
| GPC -4 | The ability to use methods of solving problems using modern equipment in the development of new technologies in professional activity and to use modern professional methodology for conducting experimental research and interpreting their results. | Inorganic and analytical chemistry<br>Organic Chemistry<br>Biological physics<br>Computer science<br>Physical and colloidal chemistry<br>Cytology, histology and embryology<br>Biological chemistry<br>Veterinary microbiology and mycology<br>Virology and biotechnology<br>Physiology and ethology of animals<br>Breeding with the basics of private animal husbandry<br>Pathological physiology<br>Veterinary Radiobiology<br>Clinical diagnosis<br>Pathological anatomy<br>Operative surgery with topographic anatomy<br>Instrumental diagnostic methods<br>Toxicology | Endocrinology<br>Nephrology<br>Reconstructive and reconstructive surgery<br>Veterinary Ophthalmology<br>Animal Dentistry |

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| | | Obstetrics, gynecology and andrology<br>Internal non-infectious diseases<br>General surgery<br>Private Veterinary surgery<br>Parasitology and invasive diseases<br>Epizootology and infectious diseases<br>Mathematics<br>Immunology<br>Veterinary sanitation<br>Technology of processing livestock products<br>Medicinal and poisonous plants<br>Forage plants<br>Fundamentals of intellectual work<br>Personality psychology and professional self-determination<br>Clinical laboratory diagnostics<br>Laboratory diagnostics of infectious and invasive diseases<br>Diseases of horses<br>Diseases of productive animals<br>Diseases of small pets<br>Diseases of small pets<br>Bee diseases and entomophages<br>Fish pathology and aquaculture<br>Diseases of exotic animals<br>Anesthesiology, intensive care and intensive care<br>Dermatology | |
| GPC -5 | The ability to draw up special documentation, analyze the results of | Veterinary genetics<br>Computer science<br>Breeding with the basics | Endocrinology<br>Nephrology |

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| | professional activity and submit accounting documents using specialized databases. | of private animal husbandry<br>Clinical diagnosis<br>Pathological anatomy<br>Operative surgery with topographic anatomy<br>Instrumental diagnostic methods<br>Obstetrics, gynecology and andrology<br>Internal non-infectious diseases<br>Parasitology and invasive diseases<br>Epizootology and infectious diseases<br>Veterinary and sanitary examination<br>Organization of veterinary business<br>Forensic veterinary examination and autopsy of animals<br>Veterinary deontology<br>Economics and organization of agricultural production<br>Clinical laboratory diagnostics<br>Laboratory diagnostics of infectious and invasive diseases<br>Organization of state veterinary supervision<br>Veterinary and industrial laboratories with the basics of design<br>Anesthesiology, intensive care and intensive care<br>Dermatology | |
| GPC -7 | He is able to understand the principles of modern information technologies and use them to solve the tasks of professional activity. | Computer science<br>Instrumental diagnostic methods<br>Organization of veterinary business<br>Mathematics<br>Fundamentals of | Endocrinology<br>Nephrology<br>Reconstructive and reconstructive surgery |

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| | | intellectual work<br>Clinical laboratory diagnostics<br>Laboratory diagnostics of infectious and invasive diseases<br>Veterinary and industrial laboratories with the basics of design<br>Anesthesiology, intensive care and intensive care<br>Dermatology | |
| PC -1 | The ability to collect anamnesis of life and disease of animals to identify the causes of diseases and their nature. | Veterinary genetics<br>Physiology and ethology of animals<br>Breeding with the basics of private animal husbandry<br>Animal health and welfare<br>Feeding animals with the basics of feed production<br>Clinical diagnosis<br>Toxicology<br>Obstetrics, gynecology and andrology<br>Internal non-infectious diseases<br>General surgery<br>Private Veterinary surgery<br>Parasitology and invasive diseases<br>Epizootology and infectious diseases<br>Fundamentals of rhetoric and communication<br>Veterinary deontology<br>Zoopsychology<br>Animal Health<br>Personality psychology and professional self-determination<br>Diseases of horses<br>Diseases of productive | Endocrinology<br>Nephrology<br>Reconstructive and reconstructive surgery<br>Veterinary Ophthalmology<br>Animal Dentistry |

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| | | animals<br>Diseases of small pets<br>Diseases of small pets<br>Diseases of exotic animals<br>Anesthesiology, intensive care and intensive care<br>Dermatology | |
| PC -3 | Ability to develop animal research programs using special (instrumental) and laboratory methods. | Animal Anatomy<br>Organic Chemistry<br>Biological physics<br>Physical and colloidal chemistry<br>Biological chemistry<br>Veterinary microbiology and mycology<br>Virology and biotechnology<br>Physiology and ethology of animals<br>Pathological physiology<br>Clinical diagnosis<br>Pathological anatomy<br>Instrumental diagnostic methods<br>Toxicology<br>Obstetrics, gynecology and andrology<br>Internal non-infectious diseases<br>General surgery<br>Private Veterinary surgery<br>Parasitology and invasive diseases<br>Epizootology and infectious diseases<br>Immunology<br>Veterinary deontology<br>Clinical laboratory diagnostics<br>Laboratory diagnostics of infectious and invasive diseases<br>Veterinary and industrial laboratories with the basics of design | Endocrinology<br>Nephrology<br>Reconstructive and reconstructive surgery<br>Veterinary Ophthalmology<br>Animal Dentistry |

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| | | Diseases of horses<br>Diseases of productive animals<br>Diseases of small pets<br>Diseases of small pets<br>Bee diseases and entomophages<br>Fish pathology and aquaculture<br>Diseases of exotic animals<br>Anesthesiology, intensive care and intensive care<br>Dermatology | |
| PC -4 | The ability to conduct clinical studies of animals using special (instrumental) and laboratory methods to clarify the diagnosis. | Animal anatomy<br>Biological physics<br>Cytology, histology and embryology<br>Biological chemistry<br>Veterinary microbiology and mycology<br>Virology and biotechnology<br>Physiology and ethology of animals<br>Pathological physiology<br>Clinical diagnosis<br>Pathological anatomy<br>Instrumental diagnostic methods<br>Obstetrics, gynecology and andrology<br>Internal non-infectious diseases<br>General surgery<br>Private Veterinary surgery<br>Parasitology and invasive diseases<br>Epizootology and infectious diseases<br>Clinical laboratory diagnostics<br>Laboratory diagnostics of infectious and invasive diseases<br>Diseases of horses | Endocrinology<br>Nephrology<br>Veterinary Ophthalmology<br>Animal Dentistry |

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| | | Diseases of productive animals<br>Diseases of small pets<br>Diseases of small pets<br>Diseases of exotic animals<br>Anesthesiology, intensive care and intensive care<br>Dermatology | |
| PC -5 | The ability to make a diagnosis based on the analysis of anamnesis data, general, special (instrumental) and laboratory research methods. | Veterinary genetics<br>Cytology, histology and embryology<br>Physiology and ethology of animals<br>Breeding with the basics of private animal husbandry<br>Feeding animals with the basics of feed production<br>Pathological physiology<br>Clinical diagnosis<br>Pathological anatomy<br>Toxicology<br>Obstetrics, gynecology and andrology<br>Internal non-infectious diseases<br>General surgery<br>Private Veterinary surgery<br>Parasitology and invasive diseases<br>Epizootology and infectious diseases<br>Forensic veterinary examination and autopsy of animals<br>Zoopsychology<br>Diseases of horses<br>Diseases of productive animals<br>Diseases of small pets<br>Diseases of small pets<br>Bee diseases and entomophages<br>Fish pathology and | Endocrinology<br>Nephrology<br>Reconstructive and reconstructive surgery<br>Veterinary Ophthalmology<br>Animal Dentistry |

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| | | aquaculture<br>Diseases of exotic animals<br>Anesthesiology, intensive care and intensive care<br>Dermatology | |
| PC -6 | The ability to develop a treatment plan for animals based on the established diagnosis and individual characteristics of animals. | Veterinary genetics<br>Veterinary microbiology and mycology<br>Virology and biotechnology<br>Pathological physiology<br>Veterinary Pharmacology<br>Toxicology<br>Obstetrics, gynecology and andrology<br>Internal non-infectious diseases<br>General surgery<br>Private Veterinary surgery<br>Parasitology and invasive diseases<br>Epizootology and infectious diseases<br>Mathematics<br>Immunology<br>Zoopsychology<br>Diseases of horses<br>Diseases of productive animals<br>Diseases of small pets<br>Diseases of small pets<br>Bee diseases and entomophages<br>Fish pathology and aquaculture<br>Diseases of exotic animals<br>Anesthesiology, intensive care and intensive care<br>Dermatology | Endocrinology<br>Nephrology<br>Reconstructive and reconstructive surgery<br>Veterinary Ophthalmology<br>Animal Dentistry |
| PC -7 | The ability to choose the necessary drugs of chemical and biological | Inorganic and analytical chemistry<br>Organic Chemistry | Endocrinology<br>Nephrology<br>Veterinary |

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| | nature for the treatment of animals, taking into account their combined pharmacological effect on the body. | Physical and colloidal chemistry<br>Biological chemistry<br>Veterinary microbiology and mycology<br>Virology and biotechnology<br>Pathological physiology<br>Veterinary Pharmacology<br>Toxicology<br>Obstetrics, gynecology and andrology<br>Internal non-infectious diseases<br>General surgery<br>Private Veterinary surgery<br>Parasitology and invasive diseases<br>Epizootology and infectious diseases<br>Medicinal and poisonous plants<br>Diseases of horses<br>Diseases of productive animals<br>Diseases of small pets<br>Diseases of small pets<br>Bee diseases and entomophages<br>Fish pathology and aquaculture<br>Diseases of exotic animals<br>Anesthesiology, intensive care and intensive care<br>Dermatology | Ophthalmology<br>Animal Dentistry |
| PC -8 | Ability to choose methods of non-drug therapy, including physiotherapy methods for the treatment of animals. | Veterinary microbiology and mycology<br>Virology and biotechnology<br>Physiology and ethology of animals<br>Feeding animals with the basics of feed production | Endocrinology<br>Nephrology<br>Reconstructive and reconstructive surgery<br>Veterinary Ophthalmology<br>Animal Dentistry |

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| | | Pathological physiology<br>Veterinary Radiobiology<br>Internal non-infectious diseases<br>General surgery<br>Private Veterinary surgery<br>Diseases of horses<br>Diseases of productive animals<br>Diseases of small pets<br>Diseases of small pets<br>Diseases of exotic animals<br>Anesthesiology, intensive care and intensive care<br>Dermatology | |
| PC -9 | The ability to carry out therapeutic, including physiotherapy procedures using special equipment in compliance with safety rules. | Animal anatomy<br>Life safety<br>Veterinary microbiology and mycology<br>Virology and biotechnology<br>Physiology and ethology of animals<br>Pathological physiology<br>Veterinary Radiobiology<br>General surgery<br>Private Veterinary surgery<br>Diseases of horses<br>Diseases of productive animals<br>Diseases of small pets<br>Diseases of small pets<br>Diseases of exotic animals<br>Anesthesiology, intensive care and intensive care<br>Dermatology | Endocrinology<br>Nephrology<br>Reconstructive and reconstructive surgery<br>Veterinary Ophthalmology<br>Animal Dentistry |
| PC -10 | The ability to determine the need for the use of surgical methods in the treatment of animals. | Veterinary genetics<br>Cytology, histology and embryology<br>Veterinary microbiology | Endocrinology<br>Nephrology<br>Reconstructive and reconstructive |

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| | | and mycology<br>Physiology and ethology of animals<br>Pathological physiology<br>Clinical diagnosis<br>Pathological anatomy<br>Obstetrics, gynecology and andrology<br>General surgery<br>Private Veterinary surgery<br>Diseases of horses<br>Diseases of productive animals<br>Diseases of small pets<br>Diseases of small pets<br>Diseases of exotic animals<br>Dermatology | surgery<br>Veterinary Ophthalmology<br>Animal Dentistry |
| PC -11 | Ability to develop a surgical operation plan, including the choice of analgesia method | Animal anatomy<br>Veterinary microbiology and mycology<br>Physiology and ethology of animals<br>Pathological physiology<br>Veterinary Pharmacology<br>Pathological anatomy<br>Operative surgery with topographic anatomy<br>Obstetrics, gynecology and andrology<br>General surgery<br>Private Veterinary surgery<br>Anesthesiology, intensive care and intensive care<br>Dermatology | Endocrinology<br>Nephrology<br>Reconstructive and reconstructive surgery |
| PC -13 | Ability to develop recommendations for special feeding of sick animals for therapeutic purposes. | Physiology and ethology of animals<br>Feeding animals with the basics of feed production<br>Pathological physiology<br>Internal non-infectious diseases<br>General surgery | Endocrinology<br>Nephrology |

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| | | Private Veterinary surgery<br>Medicinal and poisonous plants<br>Forage plants<br>Anesthesiology, intensive care and intensive care<br>Dermatology | |
| PC -14 | The ability to conduct repeated examinations and studies of animals to assess the effectiveness and safety of the prescribed treatment and adjust the treatment plan of animals (if necessary) based on the results of the evaluation of the effectiveness of treatment. | Cytology, histology and embryology<br>Physiology and ethology of animals<br>Pathological physiology<br>Veterinary Pharmacology<br>Clinical diagnosis<br>Pathological anatomy<br>Instrumental diagnostic methods<br>Toxicology<br>Obstetrics, gynecology and andrology<br>Internal non-infectious diseases<br>General surgery<br>Private Veterinary surgery<br>Parasitology and invasive diseases<br>Epizootology and infectious diseases<br>Clinical laboratory diagnostics<br>Diseases of horses<br>Diseases of productive animals<br>Diseases of small pets<br>Diseases of small pets<br>Diseases of exotic animals<br>Anesthesiology, intensive care and intensive care<br>Dermatology | Endocrinology<br>Nephrology<br>Reconstructive and reconstructive surgery<br>Veterinary Ophthalmology<br>Animal Dentistry |
| PC -18 | The ability to draw up a plan for the medical examination of animals, | Veterinary genetics<br>Physiology and ethology of animals | Endocrinology<br>Nephrology<br>Veterinary |

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| | taking into account their types and purpose, to conduct medical examinations, to develop recommendations for carrying out preventive and curative measures based on the results of the examination of animals conducted as part of the medical examination | Breeding with the basics of private animal husbandry<br>Animal health and welfare<br>Feeding animals with the basics of feed production<br>Pathological physiology<br>Veterinary Pharmacology<br>Clinical diagnosis<br>Pathological anatomy<br>Instrumental diagnostic methods<br>Toxicology<br>Obstetrics, gynecology and andrology<br>Internal non-infectious diseases<br>General surgery<br>Private Veterinary surgery<br>Animal Health<br>Clinical laboratory diagnostics<br>Diseases of horses<br>Diseases of productive animals<br>Diseases of small pets<br>Diseases of small pets<br>Diseases of exotic animals<br>Dermatology | Ophthalmology<br>Animal Dentistry |
| PC -19 | The ability to perform post-mortem diagnostic examination of animals in order to establish pathological processes, diseases, causes of death. | Animal anatomy<br>Cytology, histology and embryology<br>Life safety<br>Pathological anatomy<br>Toxicology<br>Obstetrics, gynecology and andrology<br>Internal non-infectious diseases<br>General surgery<br>Private Veterinary surgery<br>Parasitology and | Endocrinology<br>Nephrology<br>Veterinary Ophthalmology<br>Animal Dentistry |

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|---|---|---|---|
| | | invasive diseases<br>Epizootology and infectious diseases<br>Veterinary and sanitary examination<br>Forensic veterinary examination and autopsy of animals<br>Clinical laboratory diagnostics<br>Laboratory diagnostics of infectious and invasive diseases<br>Diseases of horses<br>Diseases of productive animals<br>Diseases of small pets<br>Bee diseases and entomophages<br>Fish pathology and aquaculture<br>Diseases of exotic animals<br>Dermatology | |
| PC -24 | Ability and willingness to promote veterinary knowledge, including in the field of prevention of animal diseases. | Physiology and ethology of animals<br>Breeding with the basics of private animal husbandry<br>Animal health and welfare<br>Feeding animals with the basics of feed production<br>Pathological physiology<br>Pathological anatomy<br>Toxicology<br>Obstetrics, gynecology and andrology<br>Internal non-infectious diseases<br>General surgery<br>Private Veterinary surgery<br>Parasitology and invasive diseases<br>Epizootology and infectious diseases | Endocrinology<br>Nephrology<br>Reconstructive and reconstructive surgery<br>Veterinary Ophthalmology<br>Animal Dentistry<br>Foreign language for special purposes<br>Russian for special purposes<br>Foreign language. Translation of special texts<br>Russian language. Translation of special texts<br>Foreign language. Professional communications<br>Russian language. Professional communications |

| | | | |
|---|---|---|---|
| | | Fundamentals of rhetoric and communication<br>Introduction to the specialty<br>General and veterinary ecology<br>Veterinary sanitation<br>Veterinary deontology<br>Economics and organization of agricultural production<br>Medicinal and poisonous plants<br>Forage plants<br>Zoopsychology<br>Animal Health<br>Diseases of horses<br>Diseases of productive animals<br>Diseases of small pets<br>Diseases of small pets<br>Bee diseases and entomophages<br>Fish pathology and aquaculture<br>Diseases of exotic animals<br>Dermatology | |

## 4. COURSE WORKLOAD AND TRAINING ACTIVITIES

Course workload of the discipline "**Nephrology**" is 3 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** | | | |
|---|---|---|---|---|---|---|
| | | | **9** | **-** | **-** | **-** |
| Contact academic hours | | 54 | 54 | - | - | - |
| including | | | | | | |
| Lectures | | 18 | 18 | - | - | - |
| Lab work | | 36 | 36 | - | - | - |
| Seminars (workshops/tutorials) | | - | - | - | - | - |
| Self-study | | 38 | 38 | - | - | - |
| Evaluation and assessment (exam/pass/fail grading) | | 16 | 16 | - | - | - |
| **Course workload** | Academic | **108** | **108** | **-** | **-** | **-** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | hour | | | | | |
| | Credit unit | **3** | **3** | **-** | **-** | **-** |

*Table 4.2. Types of academic activities during the period of the HE program mastering for **part-time** study*

| **Types of academic activities** | | **HOURS** | **Semesters** | | | |
|---|---|---|---|---|---|---|
| | | | **A** | **-** | **-** | **-** |
| Contact academic hours | | 36 | 36 | - | - | - |
| including | | | | | | |
| Lectures | | - | - | - | - | - |
| Lab work | | 36 | 36 | - | - | - |
| Seminars (workshops/tutorials) | | - | - | - | - | - |
| Self-study | | 62 | 62 | - | - | - |
| Evaluation and assessment (exam/pass/fail grading) | | 10 | 10 | - | - | - |
| **Course workload** | Academic hour | **108** | **108** | **-** | **-** | **-** |
| | Credit unit | **3** | **3** | **-** | **-** | **-** |

## 5. CONTENT OF THE DISCIPLINE

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

| **Name of the discipline section** | **Content of the section (topics)** | **Types of academic activities** |
|---|---|---|
| Section 1. General issues of nephrology. | Topic 1.1. Functional morphology of the kidneys.<br>Semiotics of kidney diseases.<br>Assessment of the functional state of the kidneys. | Lectures, Lab work. |
| Section 2. Kidney diseases. | Topic 2.1. Glomerulonephritis, pyelonephritis, kidney damage in metabolic diseases. | Lectures, Lab work. |
| | Topic 2.2. Secondary nephropathies, congenital and hereditary nephropathies. | Lectures, Lab work. |

## 6. CLASSROOM INFRASTRUCTURE 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 discipline** (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. | - |
| Laboratory | An auditorium for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and 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. RECOMMENDED SOURCES FOR COURSE STUDIES

*Main reading:*


1. 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. : ill. - (Textbooks and manuals for higher educational institutions). - ISBN 978-5-906371-03-4
2. Infectious diseases of animals : textbook / A.A. Sidorchuk, N.A. Maksimov, V.L. Kupalnik [et al.]; edited by A.A. Sidorchuk. - 2nd ed. - Moscow : INFRA-M, 2020. - 954 p. : ill. - (Higher education. Specialty). - ISBN 978-5-16-010419-5


*Additional Reading:*


1. Infectious diseases of animals : a textbook for universities / Edited by A.A.Kudryashov, A.V.Svyatkovsky. - St. Petersburg: Lan, 2007. - 608 p. : ill. - (Veterinary medicine). - ISBN 978-5-8114-0710-1
2. 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. : ill. - (Textbooks and manuals for higher educational institutions). - ISBN 978-5-906371-03-4

*Resources of the Internet information and telecommunication network:*

**1.** Electronic library system of RUDN and third-party Electronic library systems to which university students have access on the basis of concluded contracts:
- Electronic library system of RUDN - ELS RUDN http://lib.rudn.ru/MegaPro/Web
- ELS "University Library online"http://www.biblioclub.ru
- ELS Yurayt http://www.biblio-online.ru
- ELS "Student Consultant"www.studentlibrary.ru
- ELS "Lan"http://eZlanbook.com/
- ELS "Trinity Bridge"http://www.trmost.com/

**2.** Databases and search engines:
- electronic fund of legal and regulatory and technical documentation http://docs.cntd.ru/
- search engine Yandex https://www.yandex.ru/
- search engine Google https://www.google.ru/
- abstract database SCOPUS 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 discipline "**Nephrology**".
2. Laboratory workshop on the discipline "**Nephrology**".

* - All educational and methodological materials for independent work of students are placed in accordance with the current procedure on the discipline page in the **Telecommunication educational and Information System!**

## 8. MID-TERM ASSESSMENT

Evaluation materials and a point-rating system* for assessing the level of competence formation (part of competencies) based on the results of mastering the discipline "**Nephrology**" are presented in the Appendix to this Work Program of the discipline.

* - Assessment Materials and a Point Rating System are formed based on the requirements of the relevant local regulatory act of the RUDN.

**DEVELOPER:**

| Professor of the Department of Veterinary Medicine | | Vatnikov Yu.A. |
|---|---|---|
| Position, Basic curriculum | Signature | Full name. |

**HEAD OF THE DEPARTMENT:**

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

**HEAD OF THE HIGHER EDUCATION PROGRAM:**

| Director of the Department of Veterinary Medicine | Vatnikov Yu.A. |
|---|---|