

*Federal State Autonomous Educational Institution of Higher Education "Peoples' Friendship
University of Russia"*

Agricultural Technology Institute

Recommended by MCSD

WORKING PROGRAM OF DISCIPLINE

Name of discipline Methodology of scientific research

Recommended for training / specialty

36.06.01 "Veterinary and animal science".

Program focus (specialization)

06.02.01 "Diagnosis of diseases and therapy of animals, pathology, oncology and morphology of
animals"

06.02.02 "Veterinary microbiology, virology, epizootology, mycology with mycotoxicology and
immunology"

06.02.10 "Private zootechnics, technology for the production of animal products"

1. Goals and objectives of the discipline:

The purpose of the discipline in preparation is to give graduate students basic knowledge about the use of research methods in veterinary medicine and livestock.

Objectives of the subject :

- the general educational task is to deepen the formation of graduate students' skills of independent research and teaching activities;
- the applied problem highlights issues related to the in-depth study of the theoretical and methodological foundations of conducting research in veterinary medicine and livestock;
- A special task is to familiarize graduate students with modern trends and methodological approaches used to solve problems of veterinary medicine and livestock, as well as the achievements in these areas.

2. Place of discipline in the structure of HEC:

The discipline " Methodology of scientific research " refers to the variable part of Block 1 of the curriculum "Disciplines (modules)".

Table No. 1 shows the previous and subsequent disciplines aimed at the formation of the competencies of the discipline in accordance with the competency matrix of HEC.

Table number 1.

Previous and subsequent disciplines aimed at the formation of competencies

| No. p / p | Code and name of competency | Previous disciplines | Subsequent disciplines (groups of disciplines) |
|-----------------------------------|---|-----------------------------------|--|
| Universal competencies | | | |
| 1 | UC-1. The ability to generate new ideas in solving research and practical problems, including in interdisciplinary fields. | History and philosophy of science | |
| General professional competencies | | | |
| 2 | GPC-2. Possession of research methodology in the field corresponding to the direction of training. | | Science research |
| 3 | GPC-3. Knowledge of the culture of scientific research; including using the latest information and communication technologies. | | Science research |
| Professional competencies | | | |
| 4 | PC-3. The ability to conduct an independent analysis of the available information, identify fundamental problems, set goals and objectives of the study, perform laboratory research in solving specific problems of specialization using modern equipment and computing tools, demonstrate | | Science research |

| | | | |
|---|--|--|--|
| | responsibility for the quality of work and the scientific reliability of the results. | | |
| 5 | PC-4. Knowledge of the history and methodology of veterinary and zootechnical sciences, expanding general professional, fundamental training. | | |
| 6 | PC-5. The ability to creatively apply modern computer technology in the collection, storage, processing, analysis and transmission of information. | | |
| 7 | PC-6. The ability to understand and deeply comprehend the philosophical concepts of natural science, the place of veterinary and zootechnical sciences in the development of a scientific worldview. | | |

3. Requirements for the results of mastering the discipline:

The process of studying the discipline is aimed at the formation of the following competencies:

UC-1. The ability to generate new ideas in solving research and practical problems, including in interdisciplinary fields.

GPC-2. Possession of research methodology in the field corresponding to the direction of training.

GPC -3. Knowledge of the culture of scientific research; including using the latest information and communication technologies.

PC-3. The ability to conduct an independent analysis of the available information, identify fundamental problems, set goals and objectives of the study, perform laboratory research in solving specific problems of specialization using modern equipment and computing tools, demonstrate responsibility for the quality of work and the scientific reliability of the results.

PC-4. Knowledge of the history and methodology of veterinary and zootechnical sciences, expanding general professional, fundamental training.

PC-5. The ability to creatively apply modern computer technology in the collection, storage, processing, analysis and transmission of information.

PC-6. The ability to understand and deeply comprehend the philosophical concepts of natural science, the place of veterinary and zootechnical sciences in the development of a scientific worldview.

As a result of studying the discipline, the student must:

To know :

- the importance of organizing scientific research in the development of veterinary medicine and modern livestock.
- basic methods of biological research.
- types of livestock experiments, especially the conditions for conducting a livestock experiment.

- types of experiments in veterinary medicine, especially the conditions for conducting a veterinary experiment
- The main elements of the methodology of biological research.
- The technique of laying and conducting experiments in veterinary medicine and livestock.
- methods and techniques of setting up experiments.

To be able to :

- handle information technology equipment.
- work with modern software products.
- explore elementary factors of life, the interaction between factors.
- determine the types of veterinary and zootechnical experiments, the organization and features of conducting experiments on various types of domestic and farm animals.
- select objects for research.
- develop research methods and a scientific research work plan, keep primary documentation.
- conduct mathematical analysis of experimental data, formulate conclusions and justifications for them.
- establish the relationship of the studied material with other disciplines.
- apply the acquired knowledge in practical and scientific activities.

To own :

- specific theoretical knowledge of the discipline.
- modern methods and ways of organizing the experiment.
- modern information and innovative technologies .

3. The volume of discipline and types of educational work

The total complexity of the discipline is 3. credit units.____

| Type of study | Total hours | Semester | | | |
|---------------------------------------|-------------|----------|--|--|--|
| | | 1 | | | |
| Classroom activities (total) | 36 | 36 | | | |
| Including: | - | - | | | |
| Lectures | 24 | 24 | | | |
| Practical Activities (PP) | 12 | 12 | | | |
| Workshops (C) | | | | | |
| Laboratory work (LR) | | | | | |
| Independent work (total) | 45 | 45 | | | |
| Formative/Summative Assessment | 27 | 27 | | | |
| Total labor time hour | 108 | 108 | | | |
| Zach . units | 3 | 3 | | | |

5. The content of the discipline

5.1. The content of the sections of the discipline

| No. p / p | The name of the discipline section | Section content (topics) |
|-----------|--|--|
| 1. | The value, history and organization of scientific research in the development of veterinary medicine and modern livestock. Basic research methods. | - A brief archaeological and historical review. Taming and domestication of animals. Domestic changes. - Breeds of farm animals in the historical sequence of their development |
| 2. | Research process structure | - The main stages of the experiment. - Sources of scientific information. |

| | | |
|----|---|--|
| 3. | The main teaching methods and methods of setting up experiments in biology. | <ul style="list-style-type: none"> - The principle of comparison as a method of setting up zootechnical experiments - Methods based on the principle of similar groups - Methods based on the principle of period groups |
| 4. | Development of a methodology and work plan for scientific research. Maintaining primary documentation | <ul style="list-style-type: none"> - The choice of the method of setting the experiment, the tasks posed to solve the experiment, the requirements for the place of the experiment. - The main documentation for accounting for primary data in a scientific experiment. Conditions ensuring the reliability of the results of the experiment. |
| 5. | Organization and features of experiments on various types of domestic and farm animals | - Organization and features of experiments on various types of domestic and farm animals |
| 6. | Methods of mathematical processing of experimental data. | - Methods of mathematical processing of experimental data in zootechnical research |
| 7. | Research Report. Scheme for writing the final qualification work and requirements for its main sections | - Scheme for writing final qualifying work and requirements for its main sections. |

5.2 Sections of the discipline and types of classes

| No. p / p | Section Name | Lectures | Practical exercises and laboratory work | | | IW | Assessment | Total |
|-----------|--|----------|---|----|---------------|----|------------|-------|
| | | | PP/C | LR | of them in IF | | | |
| 1. | The value, history and organization of scientific research in the development of veterinary medicine and modern livestock. Basic research methods. | 2 | - | - | - | 3 | 1 | 6 |
| 2. | Research process structure | 4 | 2 | - | - | 7 | 4 | 17 |
| 3. | The main teaching methods and methods of setting up experiments in biology. | 4 | 2 | - | 1 | 7 | 4 | 17 |
| 4. | Development of a methodology and work plan for scientific research. Maintaining primary documentation | 4 | 2 | - | 1 | 7 | 4 | 17 |
| 5. | Organization and features of experiments on various types of domestic and farm animals | 4 | 2 | - | 2 | 7 | 4 | 17 |

| | | | | | | | | |
|----|---|---|---|---|---|---|---|----|
| 6. | Methods of mathematical processing of experimental data. | 4 | 2 | - | 1 | 7 | 5 | 18 |
| 7. | Research Report. Scheme for writing the final qualification work and requirements for its main sections | 2 | 2 | - | 1 | 7 | 5 | 16 |

6. Laboratory workshop

Not provided.

7. Practical classes (seminars)

| No. | Discipline section number | Name of laboratory work | Labor capacity (hour.) |
|-----|---------------------------|--|------------------------|
| 1. | one | A brief archaeological and historical review. Taming and domestication of animals. Domestic changes. | 2 |
| 2. | | Breeds of farm animals in the historical sequence of their development | |
| 3. | 2 | The main stages of the experiment. | |
| 4. | | Sources of scientific information. | |
| 5. | 3 | The principle of comparison as a method of setting up zootechnical experiments | 2 |
| 6. | | Methods built on the principle of similar groups | |
| 7. | | Methods built on the principle of period groups | |
| 8. | 4 | The choice of the method of setting the experiment, the tasks posed to solve the experiment, the requirements for the place of the experiment. | 2 |
| 9. | | The main documentation for accounting for primary data in a scientific experiment. Conditions ensuring the reliability of the results of the experiment. | |
| 10. | 5 | Organization and features of experiments on various types of domestic and farm animals | 2 |
| 11. | 6 | Methods of mathematical processing of experimental data in zootechnical research | 2 |
| 12. | 7 | Scheme for writing the final qualification work and requirements for its main sections | 2 |

8. Logistics

- Personal Computer.
- Multimedia equipment.

9 . Inform Discount maintenance of discipline

a) Software

- Windows Enterprise

- Microsoft Office .
- Adobe Acrobat .

b) Databases, reference and search engines

1. www.cnshb.ru ,
2. www.elibrary.ru ,
3. www.vet.purdue.edu ,
4. www.allvet.ru ,
5. www.glossary.ru ,
6. <https://www.ncbi.nlm.nih.gov/pubmed>
7. <http://www.uchvuz.ru>
8. <http://www.veterinarka.ru>
9. <https://www.medlit.biz>
10. <http://effect3.ru>
11. <https://cyberleninka.ru/>

10. Educational and methodological support of the discipline:

a) Main literature:

1. Nikishov A.A. The mathematical support of the experiment in animal husbandry [Text]: Textbook / A.A. Nikishov. - 3rd ed., Rev. and add. - M.: Publishing House of the RUDN University, 2014 .-- 215 p. : ill. - ISBN 978-5-209-05576-1: 132.85.

b) Additional literature:

1. Stepanov, V.G. The use of nonparametric statistics methods in research of agricultural biology and veterinary medicine: a training manual / V.G. Stepanov. - St. Petersburg: Doe, 2018 .-- 56 p. - ISBN 978-5-8114-3269-1. - Text: electronic // "Doe" electronic library system: [site]. - URL: <https://e.lanbook.com/book/111905>
2. Litvin, D.B. Elements of mathematical statistics: textbook / DB Litvin, O.N. Tavolzhanskaya. - Stavropol: StGAU, 2015 .-- 52 p. - Text: electronic // "Doe" electronic library system: [site]. - URL: <https://e.lanbook.com/book/82229>
3. Simonov G. Demographic and production indicators in agriculture / G. Simonov, V. Gurevich // Economist. - 2013. - No. 4. - S. 85-87.
4. Khomenets N.G. Experiment planning Some aspects of sensory analysis of food products: Guidelines / N.G. Khomenets. - M.: Publishing House of the RUDN University, 2011 .-- 43 p. - 45.00. http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=368401&idb=0
5. Kononyuk A.E. Fundamentals of scientific research (General theory of the experiment) [Electronic resource]. Prince 3 / A.E. Kononyuk. - Electronic text data. - Kiev: Lighting Ukraine, 2011 .-- 455 p. : ill. - ISBN 966-96574-0-9: 0.00. http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=447889&idb=0

11. Guidelines for students in the development of the discipline (module)

1. Nikishov A.A. Methodical recommendations for the statistical processing of experimental results [Text / electronic resource]: Methodical recommendations / A.A. Nikishov. - Electronic text data. - M.: Publishing house of RUDN, 2012 .-- 79 p. - ISBN

978-5-209-04681-3: 36.02.

http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=396829&idb=0

12. Fund of assessment tools for intermediate certification of students in discipline (module)

Materials for assessing the level of mastering the educational material of the discipline "**Methodology of scientific research**" (evaluation materials), including a list of competencies with an indication of the stages of their formation, a description of indicators and criteria for evaluating competencies at various stages of their formation, a description of the assessment scales, typical control tasks or other materials necessary for assessing knowledge, skills, skills and (or) experience of activity, characterizing the stages of the formation of competencies in the process of mastering the educational program, methodological materials that determine the procedures for assessing knowledge, skills, skills and (or) experience of activities that characterize the stages of formation of competencies, developed in full and available for students on the discipline page at TUIS RUDN.

Department Director



_____ Vatnikov Yu.A.