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

**Agrarian and Technological Institute**

**WORKING COURSE SYLLABUS**

# Biometrics in veterinary medicine

**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 the mastering the discipline "**Biometrics in veterinary medicine**" is to master the methodology and technique of conducting an experiment in animal husbandry and veterinary medicine, mastering the mathematical basis for planning an experiment and processing digital experimental material using computer technology. This is necessary for the veterinarian to correctly apply the methods and correctly interpret the results obtained, scientifically substantiate his actions and decisions taken for the appointment and treatment of animals.

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

The development of the discipline "**Biometrics in veterinary medicine**" 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)*

| Code | Competence | Indicators of competence accomplishment (within the discipline) |
|---|---|---|
| PC-12 | The ability to perform surgical intervention in the body of animals in the treatment of various diseases, castration, sterilization, for cosmetic purposes The ability to perform surgical intervention in the body of animals in the treatment of various diseases, castration, sterilization, for cosmetic purposes | PC-12.1 Is able to prepare the room, equipment, and supplies necessary to perform a surgical procedure in an aseptic and antiseptic manner. |
| | | PC-12.2 Is able to prepare the surgical team for surgical intervention, taking into account the requirements of asepsis and antisepsis. |
| | | PC-12.3 Is able to prepare the patient for surgical intervention, taking into account the requirements of asepsis and antisepsis. |
| | | PC-12.4 Able to assist the operating surgeon during surgical interventions. |
| | | PC-12.5 Able to perform preventive and economic operations (including castration, dehorning, etc.) in farm and companion animals. |
| | | PC-12.6 Able to independently perform diagnostic and therapeutic operations in animals of different species, taking into account the species, age and individual characteristics of patients. |

## 3. COURSE IN HIGHER EDUCATION

The discipline "**Biometrics in veterinary medicine**" 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 "**Biometrics in veterinary medicine**".

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) |
|---|---|---|---|
| PC-12 | The ability to perform surgical intervention in the body of animals in the treatment of various diseases, castration, sterilization, for cosmetic purposes The ability to perform surgical intervention in the body of animals in the treatment of various diseases, castration, sterilization, for cosmetic purposes | Law science Computer science Philosophy Life safety Instrumental diagnostic methods Organization of veterinary affairs Forensic veterinary examination and dissection of animals Maths Veterinary deontology Medicinal and poisonous plants The basics of intellectual work Personality psychology and professional self-determination Clinical laboratory diagnostics Laboratory diagnostics of infectious and invasive diseases Organization of state veterinary supervision Veterinary and industrial laboratories with design basics | Basics of social and legal knowledge Space technologies at the service of the agro-industrial complex |

## 4. COURSE WORKLOAD AND TRAINING ACTIVITIES

Course workload of the discipline "**Biometrics in veterinary medicine**" 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 | | | |
|---|---|---|---|---|---|---|
| | | | 9 | - | - | - |
| Contact academic hours | | 36 | 36 | - | - | - |
| including | | | | | | |
| Lectures | | - | - | - | - | - |
| Lab work | | 36 | 36 | - | - | - |
| Seminars (workshops/tutorials) | | - | - | - | - | - |
| Self-study | | 28 | 28 | - | - | - |
| Evaluation and assessment (exam/pass/fail grading) | | 8 | 8 | - | - | - |
| **Course workload** | Academic hour | **72** | **72** | **-** | **-** | **-** |
| | Credit unit | **2** | **2** | **-** | **-** | **-** |

*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 | | | |
|---|---|---|---|---|---|---|
| | | | 9 | - | - | - |
| Contact academic hours | | 18 | 18 | - | - | - |
| including | | | | | | |
| Lectures | | - | - | - | - | - |
| Lab work | | 18 | 18 | - | - | - |
| Seminars (workshops/tutorials) | | - | - | - | - | - |
| Self-study | | 48 | 48 | - | - | - |
| Evaluation and assessment (exam/pass/fail grading) | | 6 | 6 | - | - | - |
| **Course workload** | Academic hour | **72** | **72** | **-** | **-** | **-** |
| | Credit unit | **2** | **2** | **-** | **-** | **-** |

## 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. Biological experiment and mathematical method | Topic 1.1. Modern statistical systems: domestic and foreign. | Lab work |
| Section 2. Descriptive statistics | Topic 2.1. Calculation of the main characteristics of sample populations. | Lab work |
| | Topic 2.2. Confidence probability. | Lab work |
| | Topic 2.3. Confidence limits of the general average. | Lab work |
| | Topic 2.4. Student's criterion. | Lab work |
| | Topic 2.5. Estimation of the difference between sample averages, between sample shares. | Lab work |
| Section 3. Mathematical analysis of experimental data | Topic 3.1. Correlation analysis. | Lab work |
| | Topic 3.2. Regression analysis. | Lab work |
| | Topic 3.3. Calculation of the data of factorial experiments by the method of analysis of variance. | Lab work |
| Section 4. Experiment organization methods | Topic 4.1. Experiment planning and methodology | 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) |
|---|---|---|
| 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. Lebedko E.Y., Khokhlov A.M., Baranovsky D.I., Getmanets O.M. Biometrics in MS Excel: tutorial 2018.-172s https://e.lanbook.com/book/126951

*Additional Reading:*

1. Nikitin I.N. Veterinary entrepreneurship : textbook / I.N. Nikitin. - 4-th edition, revised. and additional - St. Petersburg : Lan', 2018. - 372 c. - ISBN 978-5-8114-3160-1. - Text : electronic // electronic library system "Lan'". : [website]. - URL: https://e.lanbook.com/book/108461
2. Shalyapina I.P. Strategic planning of the agroindustrial complex enterprise activity : textbook / I.P. Shalyapina, O.Y. Antsiferova, E.A. Miagkova. - Saint Petersburg : Lan', 2017. - 140 c. - ISBN 978-5-8114-2390-3. - Text : electronic // Electronic library system "Lan'". : [website]. - URL: https://e.lanbook.com/book/91874
3. Nikitin I.N. National and international veterinary legislation : textbook / I.N. Nikitin, A.I. Nikitin. - Saint Petersburg : Lan', 2017. - 376 c. - ISBN 978-5-8114-2316-3. - Text : electronic // electronic-library system "Lan'". : [website]. - URL: https://e.lanbook.com/book/90062
4. Professional ethics and deontology of veterinary medicine : textbook / A.A. Stekolnikov, F.I. Vasilevich, A.I. Yatusevich [et al] ; edited by A.A. Stekolnikov. - Saint Petersburg : Lan', 2015. - 448 c. - ISBN 978-5-8114-1906-7. - Text : electronic // Electronic library system "Lan'". : [website]. - URL: https://e.lanbook.com/book/64340
5. Nikitin I.N. Organization and economics of veterinary science: a textbook / I.N. Nikitin. - 6-th edition, revised and updated - St. Petersburg: Lan', 2014. - 368 c. - ISBN 978-5-8114-1609-7. - Text : electronic // Electronic library system "Lan'". : [website]. - URL: https://e.lanbook.com/book/44760

*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://e.lanbook.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 "**Biometrics in veterinary medicine**".
2. Laboratory workshop on the discipline "**Biometrics in veterinary medicine**".

\* - 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 " **Biometrics in veterinary medicine** " 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:**

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