Ministry of Education and Science of Ukraine
Sumy National Agrarian University
Faculty of Veterinary Medicine
Department of virusology , patanatomy and poultry diseases

MODULE SYLLABUS

Organization and methods of scientific research

rompulsory
(compulsory / optional)
Implementedin the
"Veterinary medicine" Academic Program

(name)
Area of specialization 211 " Veterinary Medicine "
(code, name)

at the second (master's 1.4) level of higher education

Sumy - 2021

Author: Petrov R.V. ( )

Module syllabus agreed at the the Department of Virology, Pathoanatomy and Poultry Diseases	Minutes of "10" June 2021 № 12
	Head of Department Petrov R

Approved by:

Guarantor of the Academic program (O.I. Shkromada)

Dean of the Faculty (O.L. Nechyporenko)

Syllabus review (attached) is provided by : (Ivanovskaya L.)

( )

Representative of the Department of Education Quality assurance, licensing and accreditation ( )

Registered in electronic data base 19.07. 2021

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Syllabus review data:

The academic year in which changes are made	The Academic program attachment number with changes description	Changes revised and approved		
		Minutes No and date of the department meeting	Head of Department	Guarantor of the Academic program

GENERAL INFORMATION ABOUT THE EDUCATIONAL COMPONENT

<table>
<tr><td>1.</td><td>Title</td><td colspan="4">Organization and methods of scientific research .</td></tr>
<tr><td>2.</td><td>Faculty/Department</td><td colspan="4">Faculty of Veterinary Medicine / Department of Virology, Pathoanatomy and Poultry Diseases</td></tr>
<tr><td>3.</td><td>Type (compulsory or optional)</td><td colspan="4">Mandatory ' compulsory</td></tr>
<tr><td>4.</td><td>Program(s) to which module is attached (to be filled in for compulsory types)</td><td colspan="4">21 1 Veterinary medicine .</td></tr>
<tr><td>5.</td><td>Module can be suggested for (to be filled in for optional types)</td><td colspan="4"></td></tr>
<tr><td>6.</td><td>Level of the National Qualifications Framework</td><td colspan="4">Level 7</td></tr>
<tr><td>7.</td><td>Semester and duration of module</td><td colspan="4">1 semester, 15 weeks</td></tr>
<tr><td>8.</td><td>ECTS credits number</td><td colspan="4">5.0</td></tr>
<tr><td rowspan="2">9.</td><td rowspan="2">Total workload and time allotment</td><td colspan="3">Contactwork (classes)</td><td rowspan="2">Individualwork</td></tr>
<tr><td>Lectures</td><td>Practical / seminar</td><td>Laboratory</td></tr>
<tr><td></td><td>16</td><td>-</td><td>30</td><td>104</td></tr>
<tr><td>10.</td><td>Language of instruction</td><td colspan="4">Ukrainian/ England</td></tr>
<tr><td>11.</td><td>Module leader</td><td colspan="4">Dr. vet . Sciences , Professor Petrov RV</td></tr>
<tr><td></td><td>Module leader contact information</td><td colspan="4">Corp. 3 cab . 71 ,
Tel: 0663927928 ; viber 0663927928
Romanpetrov1978 @gmail.com</td></tr>
<tr><td>12.</td><td>Module description</td><td colspan="4">The educational component studies the processing of scientific and technical information, preparation and conduct of experimental research, implementation of diagnostic tests and the principles of their validation , the structure of scientific work and its design, biometric processing of research results.</td></tr>
<tr><td>13.</td><td>Module aim</td><td colspan="4">The purpose of teaching the discipline " Organization and methods of scientific research " is to form a system of special knowledge on scientific and technical information, preparation and conduct of experimental research, diagnostic tests and principles of their validation , structure of scientific work and its design, biometric processing of research results.</td></tr>
<tr><td>14.</td><td>Module Dependencies (prerequisites, co-requisites, incompatible modules)</td><td colspan="4">The educational component is based on the study of OK:
Internal diseases animal diseases
Epizootology and infectious diseases</td></tr>
<tr><td>15.</td><td>Title</td><td colspan="4">No manifestations of academic dishonesty are allowed during the study of OK . Plagiarism check algorithm systems are also tools for counteracting violations of academic integrity . In case of violations, the response is in accordance with the regulations on the academic integrity of participants in the educational process in Sumy NAU (https://snau.edu.ua/viddil-zabezpechennya-yakosti-osviti/zabezpechennya-</td></tr>
</table>

		yakosti-osviti/akademichna-dobrochesnist/). If a violation of academic integrity is detected, the completed task is not credited and is sent for re-execution.

2. CORRELATION BETWEEN MODULE LEARNING OUTCOMES (MLOs) AND PROGRAM LEARNING OUTCOMES (PLOs)

OK learning outcomes: On successful completion of the module the learner will be able to:	Program learning outcomes to be achieved by the OK (indicate the number according to the numbering given in the OP)							Asestimatedby RND
	PLOs 1	**PLOs2**	**PLOs3**	**PLOs6**	**PLOs7**	**PLOs10**	**PLOs11**	
MLOS 1. Basic research methods and their characteristics	+			+		+		survey of theoretical issues, performing tasks in laboratory-practical classes, testing, performing tasks of independent work
MLOS 2. Information support of scientific research.	+	+		+	+	+	+	survey of theoretical issues, performing tasks in laboratory-practical classes, testing, performing tasks of independent work
MLOS 3 Biological methods lit. idzhen in veterinary m edicine .	+		+	+	+	+	+	survey of theoretical issues, performing tasks in laboratory-practical classes, testing, performing tasks of independent work
MLOS4. Basic principles of scientific lit. idzhen on ani mals .	+		+	+	+	+	+	survey of theoretical issues, performing tasks in laboratory and practical classe s, testing, performing tasks of independent work
MLOS 5. Bacteriological and mycological studies	+	+		+			+	survey of theoretical issues, performing tasks in laboratory-

								practical classes, testing, performing tasks of independent work
MLOS 6. Immunological and virological methods in scientific research.	+	+		+			+	survey of theoretical issues, performing tasks in laboratory-practical classes, testing, performing tasks of independent work
MLOS 7. The use of parasitological methods in research.	+						+	survey of theoretical issues, performing tasks in laboratory-practical classes, testing, performing tasks of independent work
MLOS 8. The use of biochemical methods in research.	+	+					+	survey of theoretical issues, performing tasks in laboratory-practical classes, testing, performing tasks of independent work
MLOS 9. The use of toxicological methods in research.	+	+		+			+	survey of theoretical issues, performing tasks in laboratory-practical classes, testing, performing tasks of independent work
MLOS 10 . Use of histological and histochemical methods in scientific research.	+	+		+			+	survey of theoretical issues, performing tasks in laboratory-practical classes, testing, performing tasks of independent work

3. MODULE INDICATIVE CONTENT
Autumn semester

Topic	Distribution of hours			RecommendedBooks
	Directed study		Self-directed study	
	Lectures	Practicals		
Topic 1. The main methods of scientific research and their characteristics. System of research methods. General scientific methods. Specific scientific (interdisciplinary and special) methods. Metodolohiya and methods of scientific research.	2	2	12	4,5,18 , 1 9
Topic 2. Information support of scientific research. Essence and types n aukovo and technical information. Methods of searching and collecting scientific information. Methods of obtaining and systematizing information. Analysis and interpretation of information. Organization of work with scientific literature. Forms of exchange of scientific information. Rules for compiling a bibliographic description (DSTU 7: 1: 2006; DSTU 8302: 2015)	2	2	12	2,6,7,18,19
Topic 3. Biological research methods in veterinary medicine. Statistical method of measurement evaluation. Biometric processing of digital data results. Safety precautions and measures to prevent human infection with pathogens. Studies in vitro , in vivo . Researchmodeling.	2	4	12	2,6,7,18,19
Topic 4. **Basic principles of animal research.** Bioethical aspects in scientific work. Personal safety when working with laboratory animals. Types of laboratory animals, basic requirements for laboratory animals and their content. Basic techniques of working with laboratory animals. Experiments using productive animals. Staging a bioassay and its significance in experimental and diagnostic studies. Alternative research methods. Basic requirements for conducting experimental research in veterinary medicine	2	2	12	1,4,6,11,12,18,19
Topic 5. **Bacteriological and mycological studies.** Rules for organizing work in veterinary microbiological laboratories. Safety precautions and measures to prevent human infection with pathogens. Sampling and transportation of material for microbiological, virological and serological tests. Technique of cultivation of bacteria and fungi. Microscopic examinations (in the dark field, phase-contrast and anoptral microscopy, luminescent, electron). Determination of sensitivity, resistance and tolerance of microorganisms to antibiotics and chemotherapeutic drugs by serial dilutions, disco-diffusion method, using nutrient media. Methods of cultivation of aerobes, anaerobes, long-term storage of microorganisms. Biological samples; use of ELISA, PCR, PMA, RID in the diagnosis of animal diseases. .	2	2	12	4,12,18,19
Topic 6. **Immunological and virological methods in scientific research.** Technique of isolation and cultivation of viruses on	2	2	12	1,4,13,18,19

laboratory animals, in cell culture, chicken embryos; indication (finding) of viruses in cell culture; use of diagnostic immunological tests (RA, RAP, RNGA, RP, RDP, RID, RN, RGA, RTGA, RZK, methods of immunofluorescence , immunoelectrophoresis , radioimmun oassay , ELISA, PCR). Technique of material research in phase-contrast, luminescent and electron microscope. List of infectious diseases included in the OIE list and diagnostic tests used in international trade. Principles of validation of diagnostic tests for infectious diseases. The use of ELISA in the diagnosis of animal diseases. The use of PCR in the diagnosis of animal diseases. The use of RID in the diagnosis of bovine leukemia. Theuseof PMA inthediagnosisofleptospirosis.				
Topic 7 .. **The use of parasitological methods in research.** Determination of the intensity and extent of the invasion. Immunobiological diagnosis of parasitic diseases. Special methods of research of parasitosis of animals.	2	4	8	11,12,18,19
Topic 8. **The use of biochemical methods in research.** Determination of biochemical blood constants of different species of animals. Determination of biochemical parameters of urine of different animals. Evaluation based on the results of biochemical studies of the general condition of the organism. Biochemical indicators of the functional state of the liver, kidneys, pancreas. Study of factors of nonspecific resistance of an organism. Study of cellular and humoral immunity.	2	2	8	3,18,19
Topic 9. The use of toxicological methods in research. Determination of acute and chronic toxicity of drugs. Cumulative effect of drugs. Pharmacokinetics, biotransformation of drugs and intoxication of animals. Methods for determining the general toxicity of feed and feed additives. Determination of chronic toxicity of drugs: blood tests and hematopoiesis; immunological parameters and tests. Toxicity studies when applied to the skin and determination of skin resorptive and local action. Pathomorphological studies for the study of various actions of drugs. Establishing the safety of veterinary drugs and feed additives. Toxico-biological studies to determine the toxicity of feed and feed additives. Cell culture is a biological model for toxicological control of veterinary drugs. Basic principles of testing drugs and feed additives. Toxicological control of drugs using ciliates. Detection of embryotoxicity and teratogenic effects of veterinary drugs. Mutagenicity study of veterinary drugs. Physico-chemical methods for the determination of mycotoxicosis . ELISA for the determination of mycotoxicosis . Establishing the toxicity of vaccines, toxoids. Detection of allergic reactions and pyrogenicity to the action of drugs. Control of microbial contamination of non-sterile dosage forms. Generalizations to determine the safety of veterinary drugs.		2	8	2, 21, 22
Topic 10. The use of histological and histochemical methods in research. Histological, histochemical, immunohistochemical studies. Selection,		2	8	3, 18, 19

fixation and transfer of pathological material for histological examinations; techniques for making paraffin, celluloid sections, their dyeing and canning; material fixation technique and preparation for histological and immunohistologicalexaminations; preservation and preservation of samples of biological material obtained as a result of experiments.				
Total	**16**	**30**	**104**	**150**

4. METHODS OF TEACHING AND TEACHING

MLOs	Teaching methods (directed study)	Hours	Learning methods (self-directed study)	Hours
MLOs 1. Basic methods of scientific research and their characteristics .	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training and control tests) **Interactive teaching methods :** (use of multimedia technologies, spreadsheets.	4	**Methods of teaching by source of knowledge:** *Verbal* : work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual* : observation. **Teaching methods by the nature of the logic of cognition** (*analytical, synthesis methods,* and *inductive method, deductive method, translational method*). **Active methods (** brainstorming, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research **).** **Interactive learning technologies** (use of multimedia technologies, dialogue learning, student cooperation (cooperation)	12
MLOS 2. Information support of scientific research	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training and control tests) **Interactive teaching methods:** (use of multimedia technologies, spreadsheets.	4	**Methods of teaching by source of knowledge:** *Verbal* : work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual* : observation. **Teaching methods by the nature of the logic of cognition** (*analytical, synthesis methods,* and *inductive method, deductive method, translational method*). **Active methods (** brainstorming, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research **).** **Interactive learning technologies** (use of multimedia	12

			technologies, dialogue learning, student cooperation (cooperation).	
MLOS 3 Biological research methods in veterinary medicine	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training and control tests) **Interactive teaching methods:** (use of multimedia technologies, spreadsheets.	4	**Methods of teaching by source of knowledge:** *Verbal* : work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual* : observation. **Teaching methods by the nature of the logic of cognition** (*analytical, synthesis methods,* and *inductive method, deductive method, translational method*). **Active methods (** brainstorming, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research **).** **Interactive learning technologies** (use of multimedia technologies, dialogue learning, student cooperation (cooperation)	12
MLOS4. Basic principles of animal research.	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training and control tests) **Interactive teaching methods:** (use of multimedia technologies, spreadsheets.	4	**Methods of teaching by source of knowledge:** *Verbal* : work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual* : observation. **Teaching methods by the nature of the logic of cognition** (*analytical, synthesis methods,* and *inductive method, deductive method, translational method*). **Active methods (** brainstorming, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research **).** **Interactive learning technologies** (use of multimedia technologies, dialogue learning, student cooperation (cooperation)	12
MLOS 5. Bacteriological and mycological studies	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration,	4	**Methods of teaching by source of knowledge:** *Verbal* : work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual* : observation. **Teaching methods by the**	12

	illustration, observation. **Active methods:** (use of technical teaching aids, use of training and control tests) **Interactive teaching methods:** (use of multimedia technologies, spreadsheets.		**nature of the logic of cognition** (*analytical, synthesis methods,* and *inductive method, deductive method, translational method*). **Active methods (** brainstorming, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research **).** **Interactive learning technologies** (use of multimedia technologies, dialogue learning, student cooperation (cooperation)	
MLOS 6. Both immunological and virological methods in scientific research	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training and control tests) **Interactive teaching methods:** (use of multimedia technologies, spreadsheets.	4	**Methods of teaching by source of knowledge:** *Verbal* : work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual* : observation. **Teaching methods by the nature of the logic of cognition** (*analytical, synthesis methods,* and *inductive method, deductive method, translational method*). **Active methods (** brainstorming, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research **).** **Interactive learning technologies** (use of multimedia technologies, dialogue learning, student cooperation (cooperation) .	12
MLOS 7. Special methods of research of parasitosis of animals.	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training and control tests) **Interactive teaching methods:** (use of multimedia technologies, spreadsheets.	4	**Methods of teaching by source of knowledge:** *Verbal* : work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual* : observation. **Teaching methods by the nature of the logic of cognition** (*analytical, synthesis methods,* and *inductive method, deductive method, translational method*). **Active methods (** brainstorming, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research **). Interactive learning technologies** (use of	16

			multimedia technologies, dialogue learning, student cooperation (cooperation)	
MLOS8. The use of biochemical methods in research	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training and control tests) **Interactive teaching methods:** (use of multimedia technologies, spreadsheets.	4	**Methods of teaching by source of knowledge:** *Verbal* : work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual* : observation. **Teaching methods by the nature of the logic of cognition** (*analytical, synthesis methods,* and *inductive method, deductive method, translational method*). **Active methods (** brainstorming, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research **).** **Interactive learning technologies** (use of multimedia technologies, dialogue learning, student cooperation (cooperation)	8
MLOS 9. The use of toxicological methods in research	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training and control tests) **Interactive teaching methods:** (use of multimedia technologies, spreadsheets.	4	**Methods of teaching by source of knowledge:** *Verbal* : work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual* : observation. **Teaching methods by the nature of the logic of cognition** (*analytical, synthesis methods,* and *inductive method, deductive method, translational method*). **Active methods (** brainstorming, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research **).** **Interactive learning technologies** (use of multimedia technologies, dialogue learning, student cooperation (cooperation)	8

MLOS 9. Use of histological and histochemical methods in scientific research	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training and control tests) **Interactive teaching methods:** (use of multimedia technologies, spreadsheets.	2	**Methods of teaching by source of knowledge:** *Verbal* : work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual* : observation. **Teaching methods by the nature of the logic of cognition** (*analytical, synthesis methods*, and *inductive method, deductive method, translational method*). **Active methods (** brainstorming, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research **).** **Interactive learning technologies** (use of multimedia technologies, dialogue learning, student cooperation (cooperation)	8

5. EVALUATION BY EDUCATIONAL COMPONENT

5.1. Diagnostic evaluation (indicated if necessary)

5.2. Summative assessment

5.2.1. To assess the expected learning outcomes provided

№	Methodsof summative evaluation	Points / Weight in the overall score	Dateofcompilation
1.	Thematicsurvey	*20 points / 20%*	Weekly
2.	Execution of tasks in laboratory- practical classes	*20 points / 20%*	Accordingtotheschedule
3.	Testing	*15 points / 15%*	For 7-8 weeks
4.	Report with a presentation on the subject of independent study of the discipline	*45 points / 45%*	According to the schedule of delivery of modules

5.2.2. Evaluationcriteria

Component[1]	**Unsatisfactorily**	**Satisfactorily**	**Okay**	**Perfectly**[2]
Thematicsurvey	*<12 points*	*12-15 points*	*15-18 points*	*20 points*
	The student can play only individual fragments of the course.	Most requirements are met, but some components are missing or insufficiently disclosed, there is no analysis of other approaches to the issue	All requirements of the task are fulfilled	All requirements of the task are fulfilled, creativity, thoughtfulness is shown, own solution of a problem is offered
Execution of tasks in	*<12 points*	*12-15 points*	*15-18 points*	*20 points*

laboratory- practical classes	Taskrequirementsn otmet	Most of the tasks are performed using the basic theoretical principles, the student has difficulty explaining the rules for solving laboratory-practical problems. Exe cution of individual control tasks is significantly formalized, there is no deep understanding of the work	The student has mastered the basic material, and understands and performs laboratory-practical tasks, has suggestions for the direction of their solutions. Underst ands the main provisions that are decisive in the course, can solve similar problems with those discussed with the teacher, but allows a small number of inaccuracies.	The applicant implements the theoretical material of the discipline in the performance of laboratory and practical work, is able to analyze and compare the results obtained on the basis of knowledge acquired from this discipline, skills, practical skills
Multipleselectiontest	*≤ 5 points*	*6-9 points*	*10–13 points*	*14-15 points*
	The student gives the correct answer to several questions (≤ 33% of the correct answers).	The student has some knowledge provided in the program of the discipline, has the basic provisions being studied and gives the correct answer to several questions (34-59% of correct answers).	The student is generally well versed in the material, knows the basic provisions of the material, and gives the correct answer to several questions (60-89% of the correct answers).	The student demonstrates complete and solid knowledge of the study material in the amount that corresponds to the program of the discipline, correctly answers the test questions (90-100% of correct answers).
Design and presentation report of independently processed material	*<9 points*	*10-19 points*	*20-39 points*	*40-45 points*
	The integrity of the student's understanding of the material on the discipline is lacking. The student did not perform independent	Despite the fact that the student completed the program of the discipline, but some components are missing or insufficiently worked, the student worked passively.	Knows the basic provisions t hat are crucial in performing independent work / individual tasks. Errors in the answers are not significant.	All requirements , tasks are fulfilled, creativity, thoughtfulne ss is shown, own solution of a problem

	study of the material.			is offered.

5.3. Formative assessment:

To assess current progress in learning and understanding areas for further improvement

№	Elementsof formative assessment	Date
1	Oral feedback after studying the topics 1,2,3,4,5,6,7,8	2,4,6,8,10,12,14,15 weeksofthesemester
2	Written feedback after studying topics 1-3, 4-8	8 , 15 weeksofthesemester
3	Written feedback from the teacher while working on laboratory-practical tasks	Within 1 weekafterexecution
4	Oral feedback from the teacher after the story with a presentation on the topic of independent study of the discipline	Duringclasses

6. LEARNING RESOURCES (LITERATURE)

Methodicalsupport

1. ZonG.A. Methodical instructionsforconductingpracticalclassesandorganizingindependentworkonthesubject "ResearchMethodology" forstudentsmajoringin 8.110101 "VeterinaryMedicine" EQL "Master" oftheFacultyofVeterinaryMedicineonthetopic: "Biometricdigitaldataprocessinginveterinarymedicineusingmoderninformationtechnology" / GA Zon, LB Ivanovskaya, EV Ващик . - Sumy, 2016. - 27 p.
2. Researchmethodology: Lecturenotesforstudentsmajoringin 8.11010101 "VeterinaryMedicine" EQL "Master" (SNAU, FVM, pr. № 2 from 26.11.2014).
3. ResearchMethodology: Methodologicalsupportforconductingpracticalclassesforstudentsmajoringin 211 "VeterinaryMedicine" EQL "Master" (SNAU, FVM, pr. №2 from 23.11.2016).
4. Researchmethodology: Methodologicalsupportforindependentworkofstudentsmajoringin 211 "VeterinaryMedicine" EQL "Master" (SNAU, FVM, pr. № 2 from 23.11.2016).

RecommendedBooks

Basic

5. BilukhaMT Fundamentals ofscientificresearch / MT Bilukha - K .: Higher school. - 1997. - 271 p.
6. Yerina AM Research methodology: a textbook. /A.M. Yerina , VB Come in , D.L. Erin . - Kyiv: CenterforEducational Literature. - 2004. - 212 p.
7. KlimenkoMO Methodology andorganizationofscientificresearch: Textbook / MO Klimenko, VG Petruk, VB Mokin , NM Wozniuk. - Kherson: Oldi-plus , 2012. - 474 p.

Auxiliary

8. Baskakov A.Ya. Methodology of scientific research : Uchebnoe posobye /A.YA. Baskakov , NV Туленков . - К .: МАУП, 2004. - 216 с.
9. VolkovaES Methods of scientific research in veterinary medicine /E.S. Volkova, VN Байтматов . - M .: Колос, 2010. - 183 с.
10. Горальский Л.П. Fundamentals ofhistologicaltechniqueand morphofunctional research methodsinnormalandpathology: Textbook / LP Горальский , B.T. Khomich, OI Kononsky - Zhytomyr: Polissya, 2011. - 288 p.

11. Preclinical studies ofveterinarydrugs /I.Ya. Kotsyunbas , OG Malik , IP Paterega and others. - Ed. AND I. Kotsyumbas . - Lviv: Triada plus, 2006. - 360 p.
12. Ymmunolohycheskye methods (Under ed. G. Frymelya , per. Sec Nam . AP Tarasov. - M .: Medicine, 1987. - 472 p.
13. Animal cell culture . Methods : lane. with English / Under Ed. R. Freshney . - M .: Мир, 1989. - 333 c.
14. Criteria and methods of control metabolism in 's organism animals and birds /Y.A. Ionov , S.O. Шаповалов , E.B. Rudenko etal. - Kharkov : Institute of Animal Husbandry NAAS, 2011. - 376 p.
15. Kuznetsov IN Scientific works : methodsof preparation and design / IN Kuznetsov - Mn .: Amalfeya, 2000. - 544 p.
16. Laboratory tests in veterinary medicine . Vyrusnые , rykketsyoznые and parazytarnые disease : Directory / Under Ed. WOULD. Antonov a. - M .: Agropromizdat , 1987. - 240 p.
17. Laboratory tests in veterinary medicine . Bakteryalnые infection : Directory / Under Ed. WOULD. Antonova. - M .: Agropromizdat , 1986 - 352 p.
18. Laboratory research in Veterinary Medicine : hymyko-toksykolohycheskye methods : Handbook / Under Ed. WOULD. Antonova. - M .: Agropromizdat , 1989. - 320 p.
19. Laboratory research in Veterinary Medicine : byohymycheskye and mykolohycheskye : Directory / Under Ed. WOULD. Antonova: M .: Agropromizdat , 1991. - 287 p.
20. Lakin GF Biometry : a textbook for universities and pedagogical institutes / G.F. Lakin . - M .: Higher school, 1973. - 343p.
21. Lomakin MS Immunological supervision / MS Lomakin . - M .: Медицина, 1990. - 256 с.
22. Ludchenko AA Fundamentals of scientific research : a textbook / AA Ludchenko , Ya.A. Лудченко , T.A. Primak . - [2nd ed ., P.]. - K .: Общество " Знания ", KOO, 2001. - 113 с.
23. Microbiological and virological research methods in veterinary medicine (reference manual). Unde r Ed. A.N. Head. - H .: NTMT, 2007. - 512 p.
24. Meyer D. Veterinary laboratory medicine. Interpretation and diagnosis ; 3rd ed . Per s Engl. / D. Meyer , D. Harvey . - M .: Софион , 2007. - 456 с.
25. Petukhov VA Veterinary genetics withthebasicsof variation statistics / V.A. Petukhov , AI Жигачев , Г.A. Nazarova. - M .: Agropromizdat , 1985. - 368 p.
26. Theoretical and praktycheskye problems hnotobyolohyy / Under Ed. acad. - VASHNIL VP Shishkova, acad. AMN Yu.F. Isakova . - M .: Agropromizdat , 1986. - 239 p.
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