MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SUMY NATIONAL AGRICULTURAL UNIVERSITY

Department of Vetsanexamination, microbiology, zoohygiene and safety and quality of animals' product

APPROVED:
Head of Vetsanexamination, microbiology, zoohygiene and safety and quality of animals' product
" _ ___ " _____2019 p.

_____ FotinaT. I.

Curriculum

Parazitology and invasive diseases
(cipher and name of the discipline)
For graduate students in specialties
211 Veterinary medicine

Sumy – 2019-2020 years

Work program on discipline «Parazitology **and invasive diseases** " for graduate students in the specialty 211Veterinary science

Developer:
Berezovskii A.V. Doctor of Veterinary Science, Professor

The work program is considered at the meeting of the Department **of Vetsanexamination, microbiology, zoohygiene and safety and quality of animals' product** Protocol from " " May 2019 year number

Head of the Department of Vetsanexamination, microbiology, zoohygiene and safety and quality of animals' product _____ ___ (Fotina T.I)

Agreed:

Dean of the Faculty _____ (Oleksandr Nechiporenko)

Methodist of the training department _____ ( )

Registered in electronic database: date: _____ 2019 p.

1. Description of the discipline

<table>
<tr><td rowspan="2">Name of indicators</td><td rowspan="2">Branch of knowledge, direction of training, educational-qualification level</td><td colspan="2">Characteristics of the discipline</td></tr>
<tr><td>full-time education</td><td></td></tr>
<tr><td rowspan="2">Number of credits -1,5</td><td>Branch of knowledge:
211Veterinary science</td><td colspan="2" rowspan="2"></td></tr>
<tr><td></td></tr>
<tr><td>Modules - 1</td><td rowspan="6"></td><td colspan="2">Year of training:</td></tr>
<tr><td>Content modules : 1</td><td>2019-2020</td><td></td></tr>
<tr><td rowspan="3"></td><td colspan="2">Course</td></tr>
<tr><td>2</td><td></td></tr>
<tr><td colspan="2">Semester</td></tr>
<tr><td>Total hours : -150)</td><td>4th</td><td></td></tr>
<tr><td rowspan="8">Weekly hours for full-time study: classroom - 3 independent work of the student - 1</td><td rowspan="8">Education level: postgraduate</td><td colspan="2">Lectures</td></tr>
<tr><td>- 36</td><td></td></tr>
<tr><td colspan="2">Practical, seminars</td></tr>
<tr><td>- 36</td><td></td></tr>
<tr><td colspan="2">Laboratory</td></tr>
<tr><td>-</td><td></td></tr>
<tr><td colspan="2">Independent work</td></tr>
<tr><td>- 78</td><td></td></tr>
<tr><td colspan="2">Type of control:
Computer testing
Oral questioning.</td></tr>
</table>

The ratio of the number of hours of classroom studies to independent and individual work is: for full-time study in the spring semester - 48/15.

2. Purpose and tasks of the discipline

Curriculum is aimed at trained and trainee veterinary professionals. It seeks to provide, in a compact format, an introduction and easily accessible reference for the more commonly encountered parasitic and zoonotic diseases and some discussion of the issues surrounding parasitological zoonoses, and their societal and economic impact. This discipline discusses parasitological zoonoses not only within the context of domestic disease, but also in the wider world. Veterinary problems become more international every day, with the massive increase in numbers of people travelling from place to place for business or pleasure. This makes it increasingly necessary for us, as healthcare professionals, to widen our horizons, so that we can respond appropriately to patient needs.

The purpose of teaching a subject is to familiarize post-graduate students with Veterinary and sanitary measures that promote the efficiency of livestock breeding, methods of diagnosis, treatment and sanitary measures, disinfection, as well as parasitological and exotic animal diseases..

The objectives of the study of the discipline - Methods of diagnostics, treatment and elimination of parasitological (including highly contagious and exotic) diseases of cattle, pigs and poultry, principles of carrying out of veterinary and sanitary measures and improvement measures that promote efficient livestock management.

3. PROGRAM OF EDUCATIONAL DISCIPLINE

Module I. Content module 1. PARASITE TAXONOMY AND MORPHOLOGY.

Topic 1. Parasite taxonomy and morphology.

Parasite taxonomy and morphology. A basic definition. Principles of classification.

Topic 2. Veterinary helminthology.

Veterinary helminthology. Phylum nemathelminthes. Phylum acanthocephala. Phylum platyhelminthes. Class nematode. Class trematoda. Class cestoda. Nematode superfamilies.

Topic 3. Veterinary protozoology. Protozoology. Kingdom protista. Apicomplexa. Microspora. Ciliophora. Bigyra. Ascomycota. Structure and function of protozoa. Phylum Sarcomastigophora. Family Eimeriidae. Phylum Microspora . Phylum Ciliophora. Classification of the protozoa. Order Kinestoplastorida (haemoflagellates). Flagellates. Rickettsia.

Topic 4. Parasites of cattle.

Endoparasites. Parasites of digestive system Parasites of the respiratories system. Parasites of the liver. Parasites of the pancreas. parasites of the serculatory system. Parasites of the nervous system. Parasites of the reproductive/urogenital system. Parasites of the connective tissuees. Parasites of the locomotory system. Ectoparasites. Lice. Mites. Flies. Oesophagus. Small intestine. Large intestine.

Trypanosoma brucei brucei. Bovine coccidiosis. Flagellate protozoa. Paramphistomum cervi**.** Nematodirus helvetianus**.** Toxocara vitulorum.

Topic 5 Parasites of sheep and goats. Parasites of the digestive system. Parasites of the respiratory system. Parasites of the pancreas. parasites of the serculatory system. Parasites of the nervous system. Parasites of the

reproductive/urogenital system. Parasites of the connective tissuees. Parasites of the locomotory system. Ectoparasites. Lice. Mites. Flies. The treatment and control of parasitic gastroenteritis (PGE) in sheep. Predilection sites and prepatent periods of Eimeria species in sheep. Predilection sites and prepatent periods of Eimeria species in goats. Other protozoa. Mammomonogamus nasicola. Other Protostrongylid species. Ecology of Lymnaea species. Babesiosis

Topic 6. Parasites of horses. Endoparasites. Parasites of digestive system Parasites of the respiratories system. Parasites of the liver. Parasites of the pancreas. parasites of the serculatory system. Parasites of the nervous system. Parasites of the reproductive/urogenital system. Parasites of the connective tissuees. Parasites of the locomotory system. Ectoparasites. Lice. Mites. Flies. Draschia megastoma. Parascaris equorum. Tapeworms. Coccidiosis. Other protozoa. Cyathostomum species.. Anoplocephala magna. Eimeria uniungulati Cylicostephanus species. Strongylus edentates. Triodontophorus. Oxyuris equi Rhinoestrus purpureus. Echinococcus granulosus.

Scientific publications . Scientific research and source of knowledge of scientific publications. Monograph , dissertation dissertation, preprint, abstracts and materials of the scientific conference, collection of scientific works.

Scientific nonperiodic edition: book, brochure, scientific collections, journals.

Types of monographs: scientific and practical.

Forms of coverage of the results of scientific work: abstracts, abstracts, abstracts. Types of lectures: informative, extended or consolidated, scientific.

Inventive activity. Research results: new technological processes and aggregates, materials and connections, devices and structures can make the subject of invention or discovery.

Oral transmission of information about scientific results. Report, reports at meetings, seminars, symposiums, conferences. Conversations with personal meetings.

4. STRUCTURE OF EDUCATIONAL DISCIPLINE

Modules	Types of work	Module name	Forms of training
Module 1	Audit work	Module I. Content module 1. Parasite taxonomy and morphology.	Lectures, Training Consultations, individual lessons Control measures (module control, checking)
Module 1	Independent work	Module I. Content module 1. Parasite taxonomy and morphology.	Summarizing additional subjects of discipline Individual research work

Table structure of the course

Form Teaching	Normative data					Control of educational work
	Course	Semester	Total	Lecture classes	Independent	Modular

			(year)	(year)		work (hours)	control 1 The final one control (offset)
				Lectures (year)	Practical classes (hours)		
Daytime	2	4	1 50	36	36	78	4 semesters

5. IN THE POWER OF KNOWLEDGE AND THE POSSIBILITIES OF ASPIRANTS (AIMS OF THE TRAINING PROGRAM)

	The content of the goal
	• Postgraduate student should know: Veterinary and sanitary measures that promote the efficiency of livestock breeding, methods of diagnosis, treatment and sanitary measures, disinfection, as well as viral, bacterial, highly contagious and exotic animal diseases. • Methods of diagnostics, treatment and elimination of parasitic (including highly contagious and exotic) diseases of cattle, principles of carrying out of veterinary and sanitary measures and improvement measures that promote efficient livestock management. • Methods of diagnostics and elimination of parasitic diseases of cattle, principles of veterinary and sanitary measures and sanitary measures; principles of preventive antiepizootic veterinary and sanitary measures in horses.
	Postgraduate student must be able to: recognize Facultative parasites and arthropod vectors. They should be good at epidemiology of parasitic
	diseases. Post-graduate student must have skills at : Resistance to parasitic diseases; Antiparasitics; and the laboratory diagnosis of parasitism etc.

6. FORMS OF CONTROL

The specifics of teaching the subject is to use three types of control: current, modular, and final.

Current control includes:

- testing (t) - this form of control allows you to check the preparation of postgraduate students for each class; is conducted on a regular basis on a selective basis;

- training (t) - is carried out with the aim of formulating skills and abilities of postgraduate students in practical direction, formation of modern scientific thinking, ability to make responsible and effective decisions;

- independent work (cf.) - this form of control allows to reveal the ability to clearly, logically and consistently answer the questions posed, the ability to work independently;

- Individual and post-graduate research work (ANDR) - conducted with the aim of obtaining practical skills and abilities in using and researching scientific sources, writing articles, abstracts, writing reports, developing presentation materials, using theoretical and empirical research methods.

Final control is conducted in the form of an exam, which is aimed at supervising the postgraduate students' knowledge.

7. THEMATIC PLANNING OF EDUCATIONAL DISCIPLINE

Full-time education

п / п	Title of topic	Lectures (hours)	Practical classes (hours)	individual (course) (year)	Total (h)	Modular control
	Module I. Content module 1. Parasite taxonomy and morphology.					
	Topic 1. Parasite taxonomy and morphology.	6	6	10	22	
	Topic 2. Veterinary helminthology.	6	6	10	22	
	Topic 3. Veterinary protozoology.	6	6	10	22	40
	Topic 4 Parasites of cattle.	6	6	15	27	
	Topic 5. Parasites of sheep and goats.	6	6	15	27	
	Topic 6. Parasites of horses.	6	6	18	30	
	Individual research work	-	-			
	Total	36	36	78	150	15 0

8. PLANNING THEORETICAL COURSE Full-time education

	Title of the course, lectures and their contents	Number of hours	Points	Bibliography
	Module I. Content module 1.			
1	**Topic 1.** Parasite taxonomy and morphology. Parasite taxonomy and morphology A basic definition. Principles of classification.	6	1	Basic summer. [3, c. 4-39; 5, p. 6] Add summer [1, c.4-39] [3, p.66-79]
2	**Topic 2.** Veterinary helminthology. Phylum Nemathelminthes. Phylum Acanthocephala. Phylum Platyhelminthes.	6	1	Basic summer. [3, c. 4-39; 5, p. 14] Add summer [1, pp. 99-119] [1, c. 142-179]
3	**Topic 3.** Veterinary protozoology. Protista Apicomplexa Microspora Ciliophora Bigyra Ascomycota	6	1	Basic summer. [3, c. 4-39; 5, p. 57] Add summer [1, c.223-271] [1, c.272-303] [2, c.337-369]
4	**Topic 4** Parasites of cattle. Endoparasites. Parasites of digestive system Parasites of the respiratory system. Parasites of the liver.	6	1	Basic summer. [3, c.4-39; 5, p. 49] Add summer [1, c.223-271]

	Parasites of the pancreas. Parasites of the circulatory system. Parasites of the nervous system. Parasites of the reproductive / urogenital system. Parasites of the connective tissuees. Parasites of the locomotory system. Ectoparasites. Lice. Mites. Flies.			[1, c.272-303] [2, c.337-369]
5	**Topic 5.** Parasites of sheep and goats. Parasites of the digestive system. Parasites of the respiratory system. Parasites of the pancreas. Parasites of the circulatory system. Parasites of the nervous system. Parasites of the reproductive/urogenital system. Parasites of the connective tissues. Parasites of the locomotory system. Ectoparasites. Lice. Mites. Flies.	6	1	Basic summer. [3, c.4-39; 5, p. 16] Add summer [1, c. 180-188] [1, c. 189-222]
6	**Topic 6.** Parasites of horses. Endoparasites. Parasites of digestive system Parasites of the respiratory system. Parasites of the liver. Parasites of the pancreas. Parasites of the circulatory system. Parasites of the nervous system. Parasites of the reproductive/urogenital system. Parasites of the connective tissues. Parasites of the locomotory system. Ectoparasites. Lice. Mites. Flies.	6	1	Basic summer. [3, c.4-39; 5, p. 86] Add summer [1, pp. 64-98] [2, p.75-81]
	Total	36		

9. PLANNING PRACTICAL STORIES Full-time education

	Title of the course, practical classes and their contents	Number - st hours.	Points	Bibliography
	Module I.			
1	**Topic 1.** Parasite taxonomy and morphology. Parasite taxonomy and morphology A basic definition. Principles of classification.	6	2	Basic summer. [2, c. 7] Add summer [1, c.4-39; 3, p.66-79]
2	**Topic 2.** Veterinary helminthology. Class Nematoda Class Trematoda	6		Basic summer. [2, c. 8]

	Class Cestoda			Add years. [1, pp. 99-119; 1, c. 142-179]
3	**Topic 3.** Veterinary protozoology Structure and function of protozoa Phylum Sarcomastigophora Family Eimeriidae Phylum Microspora Phylum Ciliophora	6		Basic summer. [2, c. 11] Add summer [1, c.223-271] [2, c.337-369]
4	**Topic 4** Parasites of cattle Oesophagus Small intestine Large intestine Trypanosoma brucei brucei Bovine coccidiosis Flagellate protozoa	6		Basic summer. [2, c. 12] Add summer [1, c.223-271] [1, c.272-303] [2, c.337-369]
5	**Topic 5.** Parasites of sheep and goats. The treatment and control of parasitic gastroenteritis (PGE) in sheep Predilection sites and prepatent periods of Eimeria species in sheep. Predilection sites and prepatent periods of Eimeria species in goats. Other protozoa Mammomonogamus nasicola Other Protostrongylid species. Ecology of Lymnaea species Babesiosis	6		Basic summer. [2, c. 14] Add summer [1, pp.180-188] [1, pp. 89-222]
6	**Topic 6.** Parasites of horses. Draschia megastoma Parascaris equorum Tapeworms Coccidiosis Other protozoa Cyathostomum species.	6		Basic summer. [2, c. 16] Add summer [1, pp. 64-98] [2, p. 75-81]
	Total	36		

10. INDEPENDENT WORK
POSTGRADUATES Full-time education

	Title of the course, their content	Number of hours	Points	Bibliography

	Module I. Content module 1.			
1	**Topic 1. Topic 1.** Parasite taxonomy and morphology.	10	2	Basic summer. [1, c. 7] Add summer [1, c.4-39; 3, p.66-79]
2	**Topic 2.** Veterinary helminthology. Nematode superfamilies	10	2	Basic summer. [1, c. 15] Add summer [1, pp. 99-119; 1, c. 142-179]
3	**Topic 3.** Veterinary protozoology Classification of the protozoa. Order Kinestoplastorida (haemoflagellates) Flagellates Rickettsia	10	2	Basic summer. [1, c. 21 Add summer [1, c.223-271] [1, c.272-303] [2, c.337-369]
4	**Topic 4** Parasites of cattle. Paramphistomum cervi**.** Nematodirus helvetianus**.** Toxocara vitulorum.	15	2	Basic summer. [1, c. 29] Add summer [1, c.223-271] [1, c.272-303] [2, c.337-369]
5	**Topic 5.** Parasites of sheep and goats. Gongylonema pulchrum Trichostrongylus axei Strongyloides papillosus	15	2	Basic summer. [1, c. 35] Add summer [1, pp.180-188] [1, pp. 89-222]
6	**Topic 6.** Parasites of horses. Anoplocephala magna Eimeria uniungulati Cylicostephanus species. Strongylus edentatus Triodontophorus Oxyuris equi Rhinoestrus purpureus Echinococcus granulosus	18	2	Basic summer. [1, c. 42] Add summer [1, pp. 64-98] [2, p.75-81]
	Individual research work		10	Basic summer. [2, c. 17]
	Total	78		

11. The list of issues that are set aside

1 Relationship and differences of everyday and scientific knowledge.
2 Methods of scientific knowledge.
3 Criteria and norms of scientific knowledge.
4 Models of analysis of scientific discovery and research.
5. Methodology of scientific research and substantiation of its results.
6 Scientific problem.
7 Hypothesis as a form of scientific knowledge, its probabilistic character.

8 The essence of the hypothetical-deductive method.

9. Method of mathematical hypothesis as a kind of hypothetical-deductive method.

10 Abduction and explanatory hypotheses.

11 General characteristics and definition of scientific theory.

12 Classification of scientific theories.

13. Methodological and heuristic principles of constructing theories.

14 Methods and models of scientific explanation.

15 Methods and functions of understanding.

16 Methods of prediction, prediction and prediction.

17 Methods of studying economic life.

18. Methods of social research.

19. Humanitarian research methods.

20. Characteristic features of the systematic method of research.

21. Construction and structure of the system.

22. Classification of systems.

23. Self-organization and evolution of systems.

24. Methods and perspectives of system research.

25. System method and modern scientific worldview.

26. Classification of research.

27. Stages of the study.

28. Development of the program and research plan.

29. Setting the goals and objectives of the study.

30. Choice of object and object of research.

31. Logical analysis of key concepts.

32. Formulation and substantiation of the research.

33. Scientific idea.

34. Principles, laws, categories.

35. Empirical, theoretical, logical knowledge.

36. The concept of science and scientific research.

37. Theory, functions of scientific theory.

38. Methodology of economic and social evaluation of fundamental research.

39. Methodology for assessing the effectiveness of R & D.

40. Analysis and use of research results.

41. Methods of collecting economic information (observation method, experiment method).

42. Economic information (primary and secondary).

43. Calculation of R & D expenditures (estimate, structure).

44. Methods of collecting economic information (method of analysis of documents, expert evaluation).

45. Methods of collecting economic information (survey method).

46. Methodological approaches to the calculation of economic efficiency of applied developments.

47. Risk assessment in conducting research.

48. Management and marketing of scientific developments.

49. Terms of comparison of options in the assessment of the economic effect of innovation.

50. Effectiveness of the results of scientific research and its criteria.

12 . Methods of training

1. Methods of learning by the source of knowledge:

1.1. ***Verbal*** : story , explanation , conversation (heuristic and reproductive), lecture , coaching , work with the book (reading, transcribing, writing out, drawing up a plan, reviewing, annotation, making tables, charts, reference notes, etc.).

1.2. ***Visual*** : demonstration , illustration , observation.

1.3. ***Practical*** : laboratory method, practical work, exercise, production-practical methods.

2. Methods of learning by the nature of the logic of knowledge.

2.1. ***Analytical*** *(essence: a part- time schedule to examine their essential features).*

2.2. ***Methods of synthesis*** *(essence: the unification of the analysis of elements or properties of an object, the phenomenon into one whole).*

2.3. ***Inductive method*** *(essence: the study of objects or phenomena from individual to general).*

2.4. ***Deductive method*** *(essence: the study of objects or phenomena from the general to the individual).*

2.5. ***Productive method*** *(essence: these are conclusions from general to general, from partial to partial, from one to one).*

3. Methods of training by the nature and level of independent mental activity of students.

3.1. ***Problem*** (*problem-information)*

3.2. ***Partial search (heuristic)***

3.3. ***Research***

3.4. ***Reproductive*** *(essence: possibility of application of the learned in practice).*

3.5. ***Explanatory-demonstrative***

hhynjjj4. Active teaching methods (***for example***) - use of technical means of training, brainstorming, crossword puzzles, contests, debates, round tables, binary classes, business and role games, talk shows, trainings, use of problem situations, excursions, classes in production , group research, self-knowledge, simulation training (built on simulation of future professional activities), use of teaching and control tests, use of reference notes of lectures , *etc.)*

5. Interactive Technologies teach ting (***for example*** *)* - the use of multimedia technology, interactive whiteboard and spreadsheets, case - study (method of analysis of specific situations), cooperation graduate (cooperation) ***and others*** .

13. Accounting and control

Management of research work of subjects of scientific activity can not be carried out without such instruments as accounting and control. They are carried

out for the purpose of successful and effective implementation of complex target programs and operational plans.

Post-graduate study, department and dean's office are registered and controlled by means of reports, reviews, inspections of documented work, etc. One form called itiv to fulfill graduate of individual plans is planned stages of the work specified in the schedule under review Supervisor s graduate.

The normative documents on the postgraduate study stipulate that the individual plan of research work for a postgraduate student shall be approved by the academic council of the faculty upon the submission of the department, on which it is fixed. To carry out the research work, a postgraduate student is appointed by a scientific supervisor from among the doctorates or professors. When conducting research on the border of adjacent issues, it is allowed to have two executives and a consultant.

Postgraduate student is obliged to master profound professional knowledge, to acquire skills of independent research work, to have a wide scientific and cultural outlook. Postgraduates may be seconded to scientific centers and leading educational institutions of Ukraine, as well as abroad, for conducting research on the chosen topic.

Post graduate students studying in isolation from production and without separation should work on a single individual plan of research work on the chosen subject of the dissertation.

14. Recommended

Books Basic

1. Axtell, R.C. and Arends, J.J. (2000) Ecology and management of arthropod pests of poultry. *Annual Review of Entomology*, **35**, 101–126.

2. Baker, A.S. (2002) *Mites and Ticks of Domestic Animals. An Identification Guide and Information Source*. The Natural History Museum, London.

Burgess, I. (2000) *Sarcoptes scabiei* and scabies. *Advances in Parasitology*, **33**, 235–293.

3. Colebrook, E. & Wall, R. (2004) Ectoparasites of livestock in Europe and the Mediterranean region. *Veterinary Parasitology*, **120**, 251–274.

4. Cox, F.E.G. (1993) *Modern Parasitology*. Blackwell Scientific Publications, Oxford. *Diseases of camels. Scientific and Technical Review* (1987) Vol. 6, No. 2, Office International des Epizooties, Paris.

5. Dryden, M.W. and Rust, M.K. (2000) The cat flea: biology, ecology and control. *Veterinary Parasitology*, **52**, 1–19.

6. Dunn, A.M. (1995) *Veterinary Helminthology*. Second edition. Heinemann Medical Books, London.

7. Fain, A. (2004) Adaptation, specificity and host– parasite coevolution in mites (Acari). *International Journal for Parasitology*, **24**, 1273–1283.

8. Georgi, J.R. and Georgi, M.E. (1990) *Parasitology for Veterinarians*. W.B. Saunders Company, Philadelphia, Pennsylvania.

9. Gullan, P.J. and Cranston, P.S. (1994) *The Insects. An Outline of Entomology*. Chapman & Hall, London.

10. Hall, M.J.R. and Wall, R. (1994) Myiasis of humans and domestic animals. *Advances in Parasitology,* **35**, 258–334.

Extra

1. Guay DR. Pet-assisted therapy in the nursing home setting: potential for zoonosis. *Am J Infect Control* 2001; **29**: 178–86.

2. Mullen, G. and Durden, L. (2002) *Medical and Veterinary Entomology*. Academic Press, Amsterdam.

3. Palmer, S.R., Soulsby, E.J.L. and Simpson, D.I.H.

(2000) *Zoonoses: Biology, Clinical Practice and Public Health Control*. Oxford Medical Publications, Oxford.

4. Smith, K.G.V. (2000) An introduction to the immature stages of British flies: Diptera larvae, with notes on eggs, puparia and pupae. *Handbooks for the Identification of British Insects*, **10**, (14), 1–280.

5. Smyth, J.D. (1994) *Introduction to Animal Parasitology*. Third edition. Cambridge University Press, Cambridge.

6. Wakelin, D. (2000) *Immunity to parasites: how parasitic infections are controlled.* Second edition.

7. Cambridge University Press, Cambridge. Walker, A. (1999) *Arthropods of Humans and Domestic Animals*. Chapman & Hall, London.

8. Wigglesworth, V.B. (1972) *The Principles of Insect Physiology*. Chapman & Hall, London.

15. Information resources

1. library reading room, Internet .