Ministry of Agriculture of the Russian Federation
Federal State Budgetary Educational Institution
of Higher Education
"St. Petersburg State University of Veterinary Medicine"

APPROVED BY
Vice-Rector for Educational
Work and Youth Policy
_____ Sukhinin A.A.
May 6, 2024

Department of Aquaculture and Fish Diseases

EDUCATIONAL WORK PROGRAM

for the discipline

«DISEASES OF BEES AND FISH»

The level of higher education
SPECIALTY

Specialty 36.05.01 Veterinary Medicine
Full-time education
Education starts in 2024

Reviewed and adopted
at the meeting of the department
on May 2, 2024.
Protocol No. 9

Head of the Department of Aquaculture and Fish Diseases,
Doctor of Biological Sciences, Associate Professor
_____ V.N. Voronin

Saint Petersburg
2024

1. PURPOSES AND OBJECTIVES OF THE DISCIPLINE

The main purpose of the discipline is to study bee and fish diseases that cause significant economic damage, as well as diseases and parasites transmitted through fish to humans and animals. Familiarization with various types of fish farms, peculiarities of biology and the most important fish species of Russia and neighboring countries. Assessment of the damage caused by diseases to fish and bee farms.

To achieve this goal, it is necessary to solve the following tasks:

a) The general educational task consists in in-depth familiarization of students with the biological foundations of fish farming and beekeeping and provides biological education in accordance with the requirements for higher educational institutions of a biological profile.

b) The applied task highlights issues related to existing widespread and especially dangerous diseases of fish, bees, their etiology, clinic, pathology, diagnosis, treatment, prevention and implementation of veterinary and sanitary, antiepizootic measures and creates a conceptual framework for the implementation of interdisciplinary structural and logical connections in order to develop medical thinking skills.

c) A special task is to familiarize students with the directions and methodological approaches used in the diagnosis, treatment and prevention of diseases of fish and bees to solve problems of animal husbandry and veterinary medicine, as well as the available achievements in this field.

2. THE LIST OF THE PLANNED RESULTS OF THE DISCIPLINE (MODULE), CORRELATED WITH THE PLANNED RESULTS OF THE REALISED EDUCATIONAL PROGRAM

As a result of mastering the discipline, the student prepares for the following types of activities, in accordance with the educational standard of the FSE on 05.36.01 "Veterinary Medicine".

The field of professional activity:

13 Agriculture

The student's competencies formed (acquired) as a result of mastering the discipline

The education of the discipline should form the following competencies:

a) Professional competencies (PC):

Type of tasks of professional activity: medical

PC-3 To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods:

ID-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases;

ID-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseases;

ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies.;

ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.;

ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms;

ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species.;

ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals disease.

PC-5 To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body:

PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.;

PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.;

PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well;

PC-5 ID-4 To be able to administer drugs to the animals body in various techniques;

PC-5 ID-5 To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.;

PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.

3. THE PLACE OF DISCIPLINE IN THE STRUCTURE OF THE MPEP

Discipline B1.V.06 "Diseases of bees and fish" is part of the disciplines formed by participants in educational relations, the federal state educational standard of higher education in the specialty 05.36.01 "Veterinary Medicine" (specialty level).
Full-time studies are mastered in the 6th semester, full-time and part-time studies in the 8th semester, part-time studies in the 3rd year.
When teaching the discipline "Diseases of bees and fish", the knowledge and skills acquired by students during the development of disciplines are used: zoology, histology and embryology, biochemistry, physiology and ethology of animals, animal anatomy, biology with the basics of ecology, pathological physiology, animal feeding, animal hygiene. The discipline "Diseases of bees and fish" is a part formed by participants in educational relations, on which subsequent disciplines are based, such as:
1. Pathological anatomy of animals.
2. Veterinary and sanitary examination.
3. Toxicology.
4. Parasitology and invasive animal diseases.
5. Epizootology and infectious diseases of animals.

4. THE SCOPE OF DISCIPLINE «DISEASES OF BEES AND FISH»

The scope of the discipline for full-time education

Type of educational work	Hours	**6th semester**
Classroom classes (total)	**50**	**50**
Including:		
Lectures, including interactive forms	16	16
Practical (PP), including interactive forms, among which are:	34	34
practical training (PT)	6	6
Self-study	58	58
Report	+	+
Type of intermediate and final certification (credit, exam)	+	+
Total labor intensity hours/credits	**108/3**	**108/3**

5. THE CONTENT OF THE DISCIPLINE «DISEASES OF BEES AND FISH»

The content of the discipline (full-time education)

№	The title	Achieved competences	Semester	Types of academic work, including students' self-study and labor intensity (in hours)			
				L	PP	PT	SS
1.	Organization of industrial fish farming. Theoretical foundations of preventive and curative work.	**PC-3** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods: ID-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases; ID-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseases; ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies.; ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.; ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms; ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species.; ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals diseases **PC-5** To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body: PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.; PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.; PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well; PC-5 ID-4 To be able to administer drugs to the animals body in various techniques; PC-5 ID-5 To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.; PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.	6	8	-	-	8

2.	Biological features of hydrobionts	**PC-3** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods: ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms;	6	-	2	-	2
3.	Aquatic toxicology	**PC-3** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods: ID-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases; ID-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseases; ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies.; ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.; ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms; ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species.; ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals diseases	6	2	-	-	4

4.	Non-infectious diseases of fish	**PC-3** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods: ID-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases; ID-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseases; ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies.; ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.; ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms; ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species.; ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals diseases **PC-5** To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body: PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.; PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.; PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well; PC-5 ID-4 To be able to administer drugs to the animals body in various techniques; PC-5 ID-5 To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.; PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.	6	2	-	-	4

5.	Invasive fish diseases	**PC-3** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods: ID-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases; ID-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseases; ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies.; ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.; ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms; ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species.; ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals diseases **PC-5** To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body: PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.; PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.; PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well; PC-5 ID-4 To be able to administer drugs to the animals body in various techniques; PC-5 ID-5 To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.; PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.	6	-	10	6	18

6.	Infectious diseases of fish	**PC-3** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods: ID-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases; ID-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseases; ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies.; ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.; ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms; ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species.; ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals diseases **PC-5** To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body: PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.; PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.; PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well; PC-5 ID-4 To be able to administer drugs to the animals body in various techniques; PC-5 ID-5 To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.; PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.	6	-	4	-	4
7.	Biological and ecological foundations of beekeeping	**PC-3** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods: ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies.;	6	2	2	-	2

8.	Non-infectious diseases of bees	**PC-3** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods: ID-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases; ID-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseases; ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies.; ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.; ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms; ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species.; ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals diseases **PC-5** To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body: PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.; PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.; PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well; PC-5 ID-4 To be able to administer drugs to the animals body in various techniques; PC-5 ID-5 To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.; PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.	6	-	2	-	4

9.	Infectious diseases of bees	**PC-3** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods: ID-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases; ID-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseases; ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies.; ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.; ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms; ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species.; ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals diseases **PC-5** To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body: PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.; PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.; PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well; PC-5 ID-4 To be able to administer drugs to the animals body in various techniques; PC-5 ID-5 To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.; PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.	6	-	4	-	4

10.	Invasive bee diseases	**PC-3** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods: ID-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases; ID-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseases; ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies.; ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.; ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms; ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species.; ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals diseases **PC-5** To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body: PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.; PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.; PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well; PC-5 ID-4 To be able to administer drugs to the animals body in various techniques; PC-5 ID-5 To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.; PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.	6	-	4	-	4

11.	Theoretical foundations of preventive and curative work in beekeeping.	**PC-5** To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body: PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.; PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.; PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well; PC-5 ID-4 To be able to administer drugs to the animals body in various techniques; PC-5 ID-5 To know the methods of pharmacological treatment . of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.; PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.	6	2	-	-	4
TOTAL FOR THE 8TH SEMESTER:				16	28	6	58

6. THE LIST OF EDUCATIONAL AND METHODOLOGICAL SUPPORT FOR STUDENTS' SELF WORK

6.1. Guidelines for self-work

1. Voronin, V. N. Methodological recommendations for the implementation of independent work in the discipline "Diseases of fish, bees, fur–bearing animals", training area 05/36.01 - "Veterinary Medicine", higher education level - specialty / Voronin Vladimir Nikolaevich, Pechenkina Alla Alekseevna ; Ministry of Agriculture of the Russian Federation, SPbGAVM. - St. Petersburg : SPbGAVM, 2016. - 15 p. – URL: method. recommendations for diseases of fish, bees, fur-bearing animals FVM 201 (accessed 04/27/2024). – Access mode: for authorization. users of the SPbGUVM EB.
2. Ichthyopathology : an educational and methodological manual / compiled by A.A. Boldyrev, N.S. Boldareva. – Volgograd : Volgograd State University, 2018. – 140 p. – URL: https://e.lanbook.com/book/112336 (accessed 04/27/2024). – Access mode: for authorization. users of the EBS "Lan".
3. Kuznetsova, E.V. The method of complete parasitological dissection of fish : a textbock on the discipline "Invasive diseases of fish" / E.V. Kuznetsova, V.N. Voronin, M.V. Mosyagina. – St. Petersburg : SPbGAVM, 2016. – 85 p. – URL: https://e.lanbook.com/book/121310 (accessed 04/27/2024). – Access mode: for authorization. users of the EBS "Lan".

6.2. Literature for self-work

1. Ichthyopathology / N.A. Golovina, Yu.A. Strelkov, V.N. Voronin [et al.]; edited by N.A. Golovina, O.N. Bauer. — Moscow: Mir, 2007. — 448 p. : ill. — (Textbooks and studies. manuals for students of higher educational institutions). - Text (visual) : direct.
2. Kozin, R. B. Practicum on beekeeping : a textbook for universities / R. B. Kozin, N. V. Irenkova, V. I. Lebedev. — 3rd ed., ster. — St. Petersburg : Lan, 2021. — 224 p. — ISBN 978-5-8114-7825-5. — Text : electronic // Lan : electronic library system. — URL: https://e.lanbook.com/book/166345 (accessed: 04/27/2024). — Access mode: for authorization. users.
3. Naumkin, V. P. Excursions in beekeeping : a textbook / V.P. Naumkin. – Orel : Orel GAU, 2014. – 155 p. – URL: https://e.lanbook.com/book/71418 (accessed 04/27/2024). – Access mode: for authorization. users of the EBS "Lan".
4. The determinant of parasites of freshwater fish of the fauna of the USSR: [in 3 volumes] / edited by O.N. Bauer. – Leningrad : Nauka, 1984-1987. - Text (visual) : direct.
5. Kalinina, E. A. Beekeeping: a textbook / E.A. Kalinina, V.F. Zlepkin. – Volgograd : Volgograd State University, 2017. – 144 p. – URL:
6. https://e.lanbook.com/book/107830 accessed 04/27/2024 (). – Access mode: for authorization. users of the EBS "Lan".
7. Ichthyopathology : an educational and methodological manual / compiled by A. A. Boldarev, N. S. Boldareva. – Volgograd: Volgograd State University, 2018. – 140 p. – URL: https://e.lanbook.com/book/112336 (accessed 04/27/2024). – Access mode: for authorization. users of the EBS "Lan".

7. THE LIST OF BASIC AND ADDITIONAL LITERATURE NECESSARY FOR THE EDUCATION OF THE DISCIPLINE «DISEASES OF BEES AND FISH»

a) basic literature:

1. Ataev, A.M. Ichthyopathology : a textbook / A.M. Ataev, M. M. Zubairova. – St. Petersburg : Lan, 2015. – 352 p. – URL: https://e.lanbook.com/book/61355 (accessed: 04/27/2024). – Access mode: for authorization. users of the EBS "Lan".

2. Bauer, O. N. Diseases of pond fish / O. N. Bauer, V. A. Musselius, Yu. A. Strelkov. - 2nd ed., reprint. and add. - Moscow : Light and food industry, 1981. - 320 p. – URL : https://clck.ru/dngre (accessed: 04/27/2024). - Access mode: for authorization. users of EB SPbGUVM.
3. Parasitic diseases of fish : a textbook / L.M. Belova, N.A. Gavrilova, A.N. Tokarev [et al.]. – St. Petersburg: SPbGAVM, 2019. – 40 p. – URL: https://e.lanbook.com/book/137599 (accessed: 04/27/2024). – Access mode: for authorization. users of the EBS "Lan".
4. Poltev, V.And. Painful and pest bee with basic microbiology : educational tool; add. MSF RF / V.And. Poltev, It Is.V. Neshataeva. - St. Petersburg: Quadro, 2010. - 184 p.

б) additional literature:

1. Arshanitsa, N.M. Ichthyopathology. Toxicoses of fish : textbook / N. M. Arshanitsa, A. A. Stekolnikov, M. R. Grebtsov. – 2nd ed., reprint. and additional – St. Petersburg : Lan, 2019. — 264 p. – URL: https://e.lanbook.com/book/122154 (accessed: 04/27/2024). – Access mode: for authorization. users of the EBS "Lan".
2. Doronin, M.V. Diagnostics of fish diseases: textbook. the manual / M.V. Doronin ; SPbGAVM. – St. Petersburg : Publishing House of SPbGAVM, 2012. – 21 p.
3. Doronin, M.V. Parasitic diseases of fish in aquaculture : a textbook / M.V. Doronin ; SPbGAVM. – St. Petersburg : Publishing House of SPbGAVM, 2011. – 28 p. (198 copies)
4. Rozhkov, K.A. Honey bee: maintenance, feeding and care : a textbook / K.A. Rozhkov, S.N. Khokhrin, A.F. Kuznetsov. – St. Petersburg : Lan, 2014. – 432 p. – URL: https://e.lanbook.com/book/49471 (accessed: 04/27/2024). – Access mode: for authorization. users of the EBS "Lan".

8. THE LIST OF RESOURCES OF THE INFORMATION AND TELECOMMUNICATION NETWORK "INTERNET" NECESSARY FOR EDUCATION OF THE DISCIPLINE «DISEASES OF BEES AND FISH»

To prepare for laboratory classes and perform self-work, students can use the following online resources:

1. https://meduniver.com - Medical information site.
2. http://www.zin.ru/journals/parazitologiya/parazit_main.asp - the journal "Parasitology"
3. http://www.infectology.ru - Bulletin of Parasitology

Electronic library systems:

1. ELS "SPBGUVM"
2. ELS "Lan Publishing House"
3. Legal reference system "ConsultantPlus"
4. University information system "RUSSIA"
5. Full-text database POLPRED.COM
6. Scientific electronic Library ELIBRARY.RU
7. Russian Scientific Network
8. Database of international scientific citation indexes Web of Science
9. Scopus database of International Science Citation Indexes
10. Full-text interdisciplinary database on agricultural and environmental sciences ProQuest AGRICULTURAL AND ENVIRONMENTAL SCIENCE DATABASE
11. Electronic books of the publishing house "Prospekt Nauki" http://prospektnauki.ru/ebooks/
12. Collection "Agriculture. Veterinary medicine" publishing house "Quadro" ELS "Elibris" publishing house "Quadro" https://elibrica.com/

9. METHODOLOGICAL GUIDELINES FOR STUDENTS ON EDUCATION OF THE DISCIPLINE « «DISEASES OF BEES AND FISH»

Methodological recommendations for students are a set of recommendations and explanations that allow them organize the process of studying this discipline optimally.

The content of methodological recommendations, as a rule, may include:

• Tips on planning and organizing the time needed to study the discipline. Description of the sequence of actions of the student, or the "scenario of studying the discipline".

Morning time is the most effective for academic work (from 8-14 hours), followed by afternoon time (from 16-19 hours) and evening time (from 20-24 hours). The most difficult material is recommended to be studied at the beginning of each time interval after rest. After 1.5 hours of work, a break is required (10-15 minutes), after 4 hours of work, the break should be 1 hour. Part of the scientific organization of labor is the master of the technique of mental labor. Normally, a student should devote about 10 hours a day to studying (6 hours at university, 4 hours at home).

The methodology of work when taking notes of oral presentations differs significantly from the methodology of work when taking notes of written sources.

By taking notes of written sources, the student has the opportunity to read again the desired passage of the text, reflect on it, highlight the main thoughts of the author, briefly formulate them, and then write them down. If necessary, he can also note his attitude to this point of view. Listening to the lecture, the student should transist most of the complexity of the above–mentioned works for another time, trying to use every minute to record the lecture, and not to comprehend it - there is no time left for this. Therefore, when taking notes of a lecture, it is recommended, to leave separate fields on each page for subsequent entries in addition to the summary.

After recording a lecture or making a summary of it, you should not leave work on the lecture material before preparing for the test. It is necessary to do as early as possible the work that accompanies takimg notes of written sources, the last could not be done during the recording of the lecture - read your notes, deciphering individual abbreviations, analyze the text, establish logical connections between its elements, in some cases show them graphically, highlight the main thoughts, mark issues, requiring additional processing, in particular, the teacher's consultations.

When working on the text of the lecture, the student should pay special attention to the problematic issues, raised by the teacher, during the lecture, as well as to his assignments and recommendations.

For each lecture, practical lesson and laboratory work, classification cod, topic, list of issues under consideration, volume in hours and links to recommended literature are provided. For classes conducted in interactive forms, its organizational form should be indicated: computer simulation, business or role-playing game, analysis of a specific situation, etc.

• Recommendations for preparing for practical classes

Practical (seminar) classes are an important part of the professional training of students. The main purpose of conducting practical (seminar) classes is to form students' analytical, creative thinking through the acquisition of practical skills. Practical classes are also conducted in order to deepen and consolidate the knowledge gained in lectures and in the process of independent work on normative documents, educational and scientific literature. For student, it is necessary, to study or repeat theoretical material on a given topic when preparing for a practical lesson for students.

When preparing for a practical lesson, the student is recommended to follow the following algorithm;

1) get acquainted with the plan of the upcoming lesson;

2) study the literature sources that have been recommended and familiarize yourself with the introductory notes to the relevant sections.

Methodological guidelines for practical (seminar) classes in the discipline, along with the work program and schedule of the educational process, refer to methodological documents that determine the level of organization and quality of the educational process.

The content of practical (seminar) classes is recorded in the working curricula of the disciplines in the sections "List of topics of practical (seminar) classes".

The most important component of any form of practical training are tasks. The basis of the task is an example that is understood from the standpoint of the theory developed in the lecture. As a rule, the main attention is paid to the formation of specific skills, which determines the content of students' activities - problem solving, laboratory work, clarification of categories and concepts of science, which are a prerequisite for correct thinking and speech.

• Practical (seminar) classes perform the following tasks:

- stimulate regular study of recommended literature, as well as attentive attitude to the lecture course;
- consolidate the knowledge gained in the process of lecture training and independent work on literature;
- expand the scope of professionally significant knowledge, skills, and abilities;
- allow you to verify the correctness of previously acquired knowledge;
- initiate skills of independent self-thinking, oral presentation;
- contribute to the free use of terminology;
-provide the teacher with the opportunity to systematically monitor the level of independent work of students.

Methodological guidelines for practical (seminar) classes on the discipline should be focused on modern business conditions, current regulatory documents, advanced technologies, the latest achievements of science, technology and practice, modern ideas about certain phenomena, the studied reality.

• Recommendations for working with literature.

Working with literature is an important stage of the student's self-work on mastering the subject, contributing not only to the consolidation of knowledge, but also to the expansion of horizons, mental abilities, memory, the ability to think, express and confirm personal hypotheses and ideas. In addition, the skills of research work necessary for further professional activityare developed.

When starting to study the literature on the topic, it is necessary to make notes, extracts, notes. It is mandatory to take notes of the works of theorists, which allow us to comprehend the theoretical basis of the study. For the rest, you can limit yourself to summary from the studied sources. All summaries and quotations must have the exact "return address" (author, title of the work, year of publication, page, etc.). It is advisable to write an abbreviated title of the question to which the extract or quotation refers. In addition, it is necessary to learn how to immediately compile a file of special literature and publications of sources, both proposed by the teacher and identified independently, as well as refer to bibliographic reference books, chronicles of journal articles, book chronicles, abstract journals. At the same time, publications of sources (articles, book titles, etc.) should be written on separate cards, which must be filled in according to the rules of bibliographic description (surname, initials of the author, title of the work. Place of publication, publisher, year of publication, number of pages, and for journal articles – the name of the journal, year of publication, page numbers). On each card, it is advisable to record the thought of the author of the book or a fact from this book on only one specific issue. If the work, even in the same paragraph or phrase, contains more judgments or facts on another issue, then they should be written out on a separate card. The presentation should be concise, accurate, without subjective assessments. On the back of the card, you can make your own notes about this book or article, its content, structure, on which sources it is written, etc.

• Explanations about working with control and test materials for the course, recommendations for completing homework.

Testing allows you to determine whether the actual behavior of the program corresponds to the expected one by performing a specially selected set of tests. A test is the fulfillment of certain

conditions and actions necessary to verify the operation of the function under test or part of it. Each question in the discipline must be answered correctly by choosing one option.

10. EDUCATIONAL SOCIAL WORK

As part of the implementation of the discipline, educational work is carried out to form a modern scientific worldview and a system of basic values, the formation and development of spiritual and moral, civil and patriotic values, a system of aesthetic and ethical knowledge and values, attitudes of tolerant consciousness in society, the formation of students' need for work as the first vital necessity, the highest value and the main way to achieve success in life, to realize the social significance of your future profession.

11. THE LIST OF INFORMATION TECHNOLOGIES USED IN THE IMPLEMENTATION OF THE EDUCATIONAL PROCESS

11.1. Information technologies

For the educational process of the discipline is previewed the use of information technologies:

- practical classes using multimedia;
- interactive technologies (dialogues, collective discussion on various topics for realization a particular educational and professional task);
- interaction with students via e - mail;
- community work in the electronic information and educational environment of St. Petersburg State University: https://spbguvm.ru/academy/eios/

11.2. Software

The list of licensed and free- distributed software, including national programs

№ п/п	Technical and computer programs recommended by sections and topics of the program	License
1	MS PowerPoint	67580828
2	LibreOffice	free software
3	OS Alt Education	AAO.0022.00
4	ABIS " MARK-SQL"	02102014155
5	MS Windows 10	67580828
6	System Consult Plus	503/КЛ
7	Android OS	free software

12. МАТЕРИАЛЬНО-ТЕХНИЧЕСКАЯ БАЗА, НЕОБХОДИМАЯ ДЛЯ ОСУЩЕСТВЛЕНИЯ ОБРАЗОВАТЕЛЬНОГО ПРОЦЕССА ПО ДИСЦИПЛИНЕ «DISEASES OF BEES AND FISH»

The title of the discipline (module), practice in accordance with the curriculum	**The title of special rooms and rooms for self-work**	**Equipment of special rooms and rooms for self-work**
Diseases of bees and fish	28 (196084, St. Petersburg, Chernihiv str., 5) Classroom for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification	*Specialized furniture: classroom tables, blackboard.* *Technical training tools: multimedia projector, screen, laptop, microscopes MBS-1, MBS-10, Biolam.* *Visual aids and educational materials: macro- and micro-preparations, posters on biology and diseases of bees and fish, photographs.*
	129 (196084, St. Petersburg, Chernihiv str., 5) Classroom for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification	*Specialized furniture: classroom tables, blackboard.* *Technical training tools: multimedia projector, screen, laptop, microscopes MBS-1, MBS-10, Biolam.* *Visual aids and educational materials: macro- and micro-preparations, posters on biology and diseases of bees and fish, photographs.*
	132 (196084, St. Petersburg, Chernihiv str., house 5) Educational laboratory of the department	*Specialized furniture: laboratory tables, laboratory cabinets.* *Technical training tools: table scales, microscopes (MBS-1, MBS-10, micromed 3, Biolam), scissors, tweezers, dissecting needles, slide and cover glasses, buckets, Schifferdecker tank, aquariums, refractometer, homogenizer, thermostat, laboratory centrifuge CLN-2, drying cabinet.* *Visual aids and educational materials: macro- and micro-preparations; wet preparations, posters on biology and diseases of bees and fish.*

	206 Large reading room (196084, St. Petersburg, Chernihiv str., house 5) Room for independent work	*Specialized furniture: tables, chairs Technical means of education: computers connected to the Internet and access to an electronic information and educational environment*
	214 Small reading room (196084, St. Petersburg, Chernihiv str., house 5) Room for independent work	*Specialized furniture: tables, chairs Technical means of education: computers connected to the Internet and access to an electronic information and educational environment*
	324 Information Technology Department (196084, St. Petersburg, Chernihiv str., house 5) Room for storage and preventive maintenance of educational equipment	*Specialized furniture: tables, chairs, special equipment, materials and spare parts for preventive maintenance of technical training facilities*
	Box No. 3 Carpentry workshop (196084, St. Petersburg, Chernihiv str., house 5) A room for storage and preventive maintenance of educational equipment	*Specialized furniture: tables, chairs, special equipment, materials for preventive maintenance of specialized furniture*

Developers:

Senior Lecturer of the Department of Aquaculture and Fish Diseases _____ A.A. Pechenkina

Annex 1

Ministry of Agriculture of the Russian Federation
Federal State Budgetary Educational Institution
of higher education
"Saint Petersburg State University of Veterinary Medicine"

Department of Aquaculture and Fish Diseases

FUND OF ASSESMENT TOOLS

for the discipline
«DISEASES OF BEES AND FISH»
The level of higher education
SPECIALTY

Specialty 05.36.01 Veterinary medicine
Full-time education

Education starts in 2024

Saint Petersburg
2024

1. PASSPORT OF THE FUND OF ASSESMENT TOOLS

Table 1

№	Acquired competence	Assessed modules of a discipline	Assesment tool
1.	**PC-3** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods: ID-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases; ID-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseases; ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies.; ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.; ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms; ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species.; ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals diseases **PC-5** To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body: PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.; PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.; PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well;	Section 1. Organization of industrial fish farming. Theoretical foundations of preventive and curative work.	Seminar Test
2.		Раздел 2. Биологические особенности гидробионтов	Seminar Test
3.		Section 3. Aquatic toxicology	Seminar Test
4.		Section 4. Non-infectious diseases of fish	Seminar Test
5.		Section 5. Invasive fish diseases	Seminar Test
6.		Section 6. Infectious diseases of fish	Seminar Test, Report
7.		Section 7. Biological and ecological foundations of beekeeping	Seminar Test
8.		Section 8. Non-infectious diseases of bees	Seminar Test
9.		Section 9. Infectious diseases of bees	Seminar Test

10.	PC-5 ID-4 To be able to administer drugs to the animals body in various techniques; PC-5 ID-5 To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.; PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.	Section 10. Invasive bee diseases	Seminar Test
11		Section 11. Theoretical foundations of preventive and curative work in beekeeping.	Seminar Test

List of assessment tools

№	Name of the assessment tool	Brief description of the assesment tool	Presentation of the assessment tool in the fund
1.	Seminar	A means of control is organized as a conversation between the teacher and the student on topics related to the discipline, and designed to clarify the amount of knowledge that students have on a certain module, topic, problem, etc. May be conducted in written form.	Questions on topics/modules of the discipline presented in relation to the competencies provided by the work program of the discipline
2.	Test	A system of standardized tasks, which allows to automate the assessment of students knowledge and skills	A fund of test assignments
3.	Report	The product of the student's independent work, which is a written summary of the results of the theoretical analysis of a certain scientific (educational and research) topic, where the author reveals the essence of the subject under study	Topics of the essays

2. INDICATORS AND CRITERIA FOR ASSESSING COMPETENCIES AT VARIOUS STAGES OF ITS FORMATION, DESCRIPTION OF ASSESSMENT SCALES

Table 3

Planned results of competency acquaired	The level of development				Assesment tool
	Unsatisfactory	Satisfactory	Good	Exellent	
PC-3 To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods:					
ID-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases;	The level of knowledge is below the minimum requirements, gross errors have occurred	Basic skills have been demonstrated, typical problems have been solved with minor errors, all tasks have been completed, but not in full	All the basic skills have been demonstrated, all the main tasks have been solved with minor errors, all the tasks have been completed in full, but some with flaws	All basic skills have been demonstrated, all main tasks have been solved with some minor flaws, all tasks have been completed in full	Seminar, Test, Report,
ID-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseases;	The level of knowledge is below the minimum requirements, gross errors have occurred	Basic skills have been demonstrated, typical problems have been solved with minor errors, all tasks have been completed, but not in full	All the basic skills have been demonstrated, all the main tasks have been solved with minor errors, all the tasks have been completed in full, but some with flaws	All basic skills have been demonstrated, all main tasks have been solved with some minor flaws, all tasks have been completed in full	Seminar, Test, Report,

ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies.;	The level of knowledge is below the minimum requirements, gross errors have occurred	Basic skills have been demonstrated, typical problems have been solved with minor errors, all tasks have been completed, but not in full	All the basic skills have been demonstrated, all the main tasks have been solved with minor errors, all the tasks have been completed in full, but some with flaws	All basic skills have been demonstrated, all main tasks have been solved with some minor flaws, all tasks have been completed in full	Seminar, Test, Report
ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.;	The level of knowledge is below the minimum requirements, gross errors have occurred	There is a minimum set of skills to solve standard tasks with some shortcomings	The level of knowledge corresponds to the training program, several minor errors have been made	The level of knowledge corresponds to the training program, no errors have been made	Seminar, Test, Report
ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms;	The level of knowledge is below the minimum requirements, gross errors have occurred	There is a minimum set of skills to solve standard tasks with some shortcomings	The level of knowledge corresponds to the training program, several minor errors have been made	The level of knowledge corresponds to the training program, no errors have been made	Seminar, Test, Report

ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species.;	The level of knowledge is below the minimum requirements, gross errors have occurred	There is a minimum set of skills to solve standard tasks with some shortcomings	The level of knowledge corresponds to the training program, several minor errors have been made	The level of knowledge corresponds to the training program, no errors have been made	Seminar, Test, Report
ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals diseases	The level of knowledge is below the minimum requirements, gross errors have occurred	There is a minimum set of skills to solve standard tasks with some shortcomings	The level of knowledge corresponds to the training program, several minor errors have been made	The level of knowledge corresponds to the training program, no errors have been made	Seminar, Test, Report
PC-5 To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body:					
PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.;	When solving standard problems basic skills were not demonstrated, gross errors occurred	Basic skills have been demonstrated, typical problems have been solved with minor errors, all tasks have been completed, but not in full	All the basic skills have been demonstrated, all the main tasks have been solved with minor errors, all the tasks have been completed in full, but some with flaws	All basic skills have been demonstrated, all main tasks have been solved with some minor flaws, all tasks have been completed in full	Seminar, Test, Report

PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.;	When solving standard problems basic skills were not demonstrated, gross errors occurred	Basic skills have been demonstrated, typical problems have been solved with minor errors, all tasks have been completed, but not in full	All the basic skills have been demonstrated, all the main tasks have been solved with minor errors, all the tasks have been completed in full, but some with flaws	All basic skills have been demonstrated, all main tasks have been solved with some minor flaws, all tasks have been completed in full	Seminar, Test, Report
PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well;	When solving standard problems basic skills were not demonstrated, gross errors occurred	Basic skills have been demonstrated, typical problems have been solved with minor errors, all tasks have been completed, but not in full	All the basic skills have been demonstrated, all the main tasks have been solved with minor errors, all the tasks have been completed in full, but some with flaws	All basic skills have been demonstrated, all main tasks have been solved with some minor flaws, all tasks have been completed in full	Seminar, Test, Report
PC-5 ID-4 To be able to administer drugs to the animals body in various techniques;	When solving standard problems basic skills were not demonstrated, gross errors occurred	Basic skills have been demonstrated, typical problems have been solved with minor errors, all tasks have been completed, but not in full	All the basic skills have been demonstrated, all the main tasks have been solved with minor errors, all the tasks have been completed in full, but some with flaws	All basic skills have been demonstrated, all main tasks have been solved with some minor flaws, all tasks have been completed in full	Seminar, Test, Report

PC-5 ID-5 To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.;	The level of knowledge is below the minimum requirements, gross errors have occurred	There is a minimum set of skills to solve standard tasks with some shortcomings	The level of knowledge corresponds to the training program, several minor errors have been made	The level of knowledge corresponds to the training program, no errors have been made	Seminar, Test, Report
PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.	The level of knowledge is below the minimum requirements, gross errors have occurred	There is a minimum set of skills to solve standard tasks with some shortcomings	The level of knowledge corresponds to the training program, several minor errors have been made	The level of knowledge corresponds to the training program, no errors have been made	Seminar, Test, Report

3. 3. A LIST OF CONTROL TASKS AND OTHER MATERIALS, NECESSARY FOR THE ASSESSMENT OF KNOWLEDGE, SKILLS AND WORK EXPERIENCE

3.1. Typical tasks for the current control of academic progress

3.1.1. Questions for control work

Competency assessment tests

PC-3 To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods:

D-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases;;

1. Diagnosis of diphyllobothriosis.
2. Diagnosis of trematode diseases of fish dangerous to humans.
3. Diagnosis of opisthorchiasis.
4. Diagnosis of corinosomiasis.
5. Diagnosis of anisakidosis.

ID-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseases;

6. The concept of the epizootic process. Forms of manifestation.
7. The dynamics of epizootics.
8. The concept of a natural source of diseases.
9. European rotten.
10. American rotten.
11. Mycoses of bees.
12. Bee aspergillosis..
13. Ascospherosis of bees.
14. Melanosis.
15. Acarapidosis of bees.
16. Bee disease.
17. Varroosis of bees.
18. Nosematosis of bees.

ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies;

19. Clinical signs of aquatic toxicosis.
20. Clinical signs in fish affected by parasitic infusoria.

ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination;

21. How is the counting of infusoria on the body of fish?
22. How is the respiratory rate of fish determined?

ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms;

23. What types of scales do fish have?
24. The location of the mouth in fish.
25. The role of the swim bladder in the life of fish.

26. The importance of the sideline in the life of pisces.
27. Which fish have an adipose fin.
28. Requirements for the placement and arrangement of apiaries.
29. Requirements for the maintenance, feeding and breeding of bees.
30. Obtaining bee products, their physico-chemical properties.
31. The main products of beekeeping.
32. Features of the structure and physiology of bees

ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species;

33. Protozoal diseases of fish caused by infusoria.
34. Ichthyophthyosis.
35. Ichthyobodosis of fish.
36. Cryptobioses of fish.
37. Salmon myxozomiasis
38. Karpov's runway.
39. The structure of monogenes.
40. Monogenoidosis of fish.
41. The cycle of trematode development.
42. Trematodoses of fish that are not dangerous to humans.
43. The development cycle of cestodes.
44. Cestodoses of fish that are not dangerous to humans.
45. Nematodes of fish that are not dangerous to humans.
46. Metechinorhinosis of salmon.
47. Argulez.
48. Crustaceosis of fish caused by oar-footed crustaceans.
49. The development cycle of Opisthorchis felineus.
50. Opisthorchiasis.
51. Trematodoses of fish are dangerous to humans.
52. The development cycle of Diphyllobothrium latum.
53. Diphyllobothriosis.
54. Anisakidosis of fish.
55. Corynosomiasis.
56. Cycles of development of fish parasites.
57. Specificity of fish parasites, forms of manifestation.

ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals disease

58. The importance of ichthyopathology in the development of fish farming and nature conservation.
59. The role and importance of ichthyopathology for aquatic bioresources and aquaculture.
60. Methods of diagnosis of fish diseases.
61. Classification of fish diseases.
62. The main pathological processes in the body of fish.
63. The protective reactions of the fish body.
64. Classification of non-infectious diseases of fish.
65. Alimentary diseases of fish, causes of development.
66. Fish diseases that occur when the environment deteriorates.
67. Functional diseases of fish. Causes of development.

Competency assessment tests

PC-5 To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body:

PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.;

68. The basic principles of combating fish diseases caused by ectoparasites.
69. The basic principles of combating fish diseases caused by endoparasites
70. Preventive measures for case of bee toxicosis.
71. Carrying out recreational activities for non-infectious diseases of bees.
72. Carrying out recreational activities for bee toxicosis.
73. Carrying out health-improving measures against infectious diseases of bees.

PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period;

74. The use of antibiotics in bacterial diseases of fish.
75. Medications for saprolegniosis of fish.

PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well;

76. Drugs used in the treatment of rotten bee diseases.
77. Drugs used in the treatment of bee mycoses.
78. Drugs used for arachnosis of bees.

PC-5 ID-4 To be able to administer drugs to the animals body in various techniques;

79. Where pituitary drugs are injected before fish spawning.

PC-5 ID-5 To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment;

80. Prevention of diseases of infectious etiology.
81. Prevention of diseases of non-infectious etiology.
82. Measures for fish toxicosis.
83. Measures to prevent feed toxicosis of fish.

PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.

84. Methods of fish vaccination.
85. Vitamin premixes used in fish farming
86. Carrying out health measures against invasive diseases and pests of bees.
87. Carrying out health measures against infectious, invasive, non-infectious diseases and pests of bees.
88. Drugs used in the treatment of rotten bee diseases.
89. Drugs used in the treatment of bee mycoses.
90. Drugs used for arachnosis of bees.
91. Preventive measures for case of bee toxicosis.

3.1.2. Approximate topics of the essays:

Topics of abstracts for competence assessment:

PC-3 To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods:

ID-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases;
ID-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseases;
ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies.;
ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.;
ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms;
ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species.;
ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals disease.

PC-5 To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body:

PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.;
PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.;
PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well;
PC-5 ID-4 To be able to administer drugs to the animals body in various techniques;
PC-5 ID-5 To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.;
PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods

1. Viral hemorrhagic septicemia.
2. Carp pox.
3. Infectious necrosis of hematopoietic tissue.
4. Infectious necrosis of the pancreas
5. Spring viremia of carp
6. Furunculosis.
7. A plague of pike.
8. Mycobacteriosis.
9. Ulcerative necrosis of salmon skin.
10. Branchiomycosis.

11. Saprolegniosis.
12. Aeromonosis.
13. Pseudomonosis.
14. Saprolegniosis.
15. Ichthyophonosis.
16. Vibriosis.
17. Viral diseases of sturgeon.
18. Herpesvirus infections of salmon.
19. Viral necrosis of red blood cells.
20. Yersiniosis.
21. Bacterial hemorrhagic septicemia.
22. Flexibacteriosis.
23. Stomatopapilloma of acne.
24. Candidomycosis.
25. Softening of the shell of salmon roe.

3.1.3. Tests

Competency assessment tests:

PC-3 To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods:

ID-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases;

1. What analysis confirms the diagnosis of diseases caused by a deficiency or excess of minerals in the feed?

1. toxicological analysis of water;
2. analysis of feed composition;
3. the parasitological method of diagnosis;
4. Clinical examination.

2. What is the name of the form of manifestation of single outbreaks of infectious diseases of fish?

1. epizootics;
2. panzootia;
3. Sporadic ;
4. Enzootia.

3. In which case of fish disease is the term "epizootic" used?

1. in one reservoir or one pond;
2. in reservoirs of the same farm;
3. in the reservoirs of one country;
4. in the reservoirs of many countries of the world

4. According to which studies the final diagnosis is made if hemorrhages are noted in fish

1. according to the results of an external examination;
2. according to clinical signs;
3. according to the results of the autopsy;
4. based on the results of a laboratory study.

5. What does the term pathogenesis mean?

1. genetic disease;
2. the mechanism of disease development;
3. laboratory genetic diagnostics;
4. Disease of fish embryos.

6. What kind of study will help to diagnose nanophyetosis?

1. Biochemical blood test;
2. Clinical blood testing;
3. general urine analysis;
4. Coprological research.

ID-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseases;

7. Which disease is functional?

1. hypovitaminosis;
2. asphyxia;
3. dropsy of the yolk sac;
4. myopathy.

8. Which of the diseases of salmon fish are non-contagious?

1. osteosis;
2. hexamitosis;
3. yersiniosis;
4. White-spotted larval disease.

9. What diseases are alimentary?

1. non-contagious branchionecrosis;
2. gas bubble disease;
3. hypovitaminosis;
4. asphyxia.

10. What is the cause of lipoid liver dystrophy in trout?

1. metabolic disorders;
2. mycotoxicosis by the fungus R.Fusarium;
3. mechanical injury;
4. The effect of adverse environmental conditions.

ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies.;

11. What disease causes cotton-like growths of the fungus?

1. Saprolegniosis;
2. Carp pox;
3. Ichthyophonosis;
4. Mycobacteriosis.

12. What form of carp viral viremia is characterized by an inadequate response to external stimuli, with alternating phases of oppression?

1. Nervous;
2. Acute;
3. Chronic;
4. Paralytic.

13. What are the tumors that form in carp pox called?

1. Epithelioma;
2. Sarcoma;
3. Lipoma ;
4. Adenocarcinoma.

ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination;

14. What is the ultimate host of Cryptobia cyprini?

1. Amphibians;
2. bundles;

3. fish;
4. Leeches.

15. How can opisthorchiasis be recognized in the final host a month after infection?

1. Clinical signs begin to appear;
2. Helminths begin to lay eggs;
3. helminths come out in large quantities with feces;
4. They acquire an invasive ability.

16. What is the name of the disease in which the typical symptoms of chronic disease are the formation of boils and ulcers in the muscle tissue of fish?

1. Saprolegniosis;
2. Carp pox;
3. Furunculosis;
4. Ichthyophonosis.

ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms;

17. What family of fish do trout, trout, palia, chum salmon, pink salmon belong to?

1. carp;
2. salmon;
3. perch;
4. Whitefish.

18. What does the circulatory system of fish look like?

1. one circulatory cycle, single-chamber heart;
2. one circulatory circle, two-chamber heart;
3. two circulatory circles, two-chamber heart;
4. Unclosed circulatory system.

19. Which family of fish has an adipose fin?

1. carp;
2. salmon;
3. perch;
4. cod.

ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species.;

20. Who is the causative agent of salmon turnip?

1. Shaerospora renicola;
2. Myxosoma pavlovskii;
3. Myxosoma cerebralis;
4. Myxobolu scyprini.

21. Who is the causative agent of aflatoxicosis

1. it is contained in the feed of gossypol;
2. high contamination of feed with saprophytic and opportunistic microorganisms;
3. Changing environmental parameters;
4. Aflatoxins produced by microscopic fungi on the feed.

22. What is the cause of white-spotted larval disease?

1. bacterial;
2. viral;
3. changes in abiotic environmental factors;
4. the effect of blue-green algae on the body of fish.

23. What is the causative agent of the disease Branchiomyces demigrans?

1. Branchiomycosis;
2. Ichthyophonosis;

3. Saprolegniosis;
4. Staff's disease.

24. Who is the causative agent of furunculosis?

1. Aeromonassalmonicidasub.sp.salmonicida;
2. Listonellaanquillarum;
3. Flavobacteriumpsychrophilum;
4. Flavobacteriumcolumnaris.

25. Which family of trematodes does metacercaria have a dark secretory vesicle occupying 1/3 of the cyst?

1) this. Opisthorchiidae;
2) this. Paragonimidae;
3) this. Diplostomidae;
4) this. Heterophylidae.

26. What kind of disease is caused by a small pear-shaped trematode?

1. metagonizomiasis;
2. metorhoz;
3. botryocephalosis;
4. paragonimosis.

27. Who is the causative agent of peptic ulcer disease and hemorrhagic septicemia?

1. Genera Aeromonas, Pseudomonas and Vibrio;
2. The genus Vesiculovirus and herpesvirus;
3. The genus Flavobacterium;
4. The genus Branchiomyces.

28. In which fish does the larval stage of the cestode parasitize, which is dangerous for humans?

1. the Karpovs;
2. sturgeon;
3. in various predatory species (pike, burbot, perch, etc.).
4. herbivorous.

29. What size does the causative agent of diphyllobothriosis reach in the human intestine?

1. 5-8 m;
2. 12-15 m;
3. 0.5-1 m;
4. Up to 40 m.

30. What is the name of the larval stage of the pseudamphystomosis pathogen that emerged from the mollusk and infects fish?

1. the churcharium;
2. metacercarium;
3. redia;
4. Sporocyst.

31. Who is the second intermediate host of Clonorchis sinensis?

1. Fish of this kind. Salmon;
2. predatory fish;
3. any kind of fish;
4. Fish of this kind. Carp.

32. Where does the parasite R.Metagonimus become sexually mature?

1. in the musculature of fish;
2. in the mammalian liver;
3. in the intestines of mammals;
4. in a clam.

33. Which of the monogenes are viviparous?

1. Dactylogiruses;

2. Gyrodactylus;
3. Diplozones;
4. Discocotyluses

34. Where does Dactylogyrus vastator parasitize?

1. on the gills;
2. in a swimming bubble;
3. in the blood;
4. in the muscles.

35. Where does Nosema apis parse?

1. the middle intestine;
2. Body surface;
3. trachea;
4. The genitals.

ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals disease.

35. Which of the listed cestodic diseases is dangerous for humans?

1. ligulosis;
2. botricephalosis;
3. diphyllobothriosis;
4. Caviosis.

36. What is the name of the disease in which water is oversaturated with nitrogen, less often with oxygen, as a result of which fish get sick and die?

1. hypovitaminosis;
2. asphyxia;
3. gas bubble disease;
4. myopathy.

37. What is the name of the disease when fungi initially infect the nasal pits of fish, then grow and cover the surface of the fish's head between the eyes and mouth?

1. Staff's disease;
2. Branchiomycosis;
3. Ichthyosporidiosis;
4. Ichthyophonosis.

38. What else is the disease called non-contagious branchionecrosis?

1. heterogeneous toxicosis;
2. autogenic necrosis;
3. nitrite necrosis;
4. nitrate necrosis

39. Which of the diseases of bees refers to mycoses?

1. ascospherosis;
2. case toxicosis;
3. braulez;
4. European rotten.

40. Which bee disease belongs to entomoses?

1. acarapidosis;
2. braulez;
3. case toxicosis;
4. Varosis.

41. What kind of bee disease affects only the printed brood?

1. European rot;
2. varosis;
3. American rotten;

4. nosamatosis.

Competency assessment tests

PC-5 To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body:

PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.;

1. How is the natural focus of the disease maintained in the fish farming?

1. farmed fish;
2. Local wild fish;
3. imported planting material;
4. imported caviar.

2. What diseases of fish are quarantined on farms?

1. botryocephalosis;
2. ichthyophthyosis;
3. argulosis;
4. Trichodynoses.

3. What medicines are used to combat ectoparasites of fish?

1. antibiotics, vitamin supplements;
2. malachite green, formalin solution;
3. chlorogenic compounds;
4. Probiotics.

4. What is the treatment for fish with argulosis?

1. methylene blue;
2. antibiotics;
3. chlorophosome;
4. Malachite green.

5. Which fish are the most sensitive to formaldehyde?

1. salmon;
2. carp;
3. types: tench, chehon;
4. Perch.

6. What anesthetics are commonly used to prevent injury to fish during technological processes?

1. ether;
2. quinaldine;
3. fol;
4. Magnesium sulfate.

7. What medicines are used to combat infectious diseases of fish?

1. Antibiotics;
2. alkalis;
3. Oxidizing agents;
4. Technical dyes.

8. What measures are not preventive?

1. Immunization of fish through vaccination;
2. feeding with food containing antibiotics or anthelmintics;
3. treatment of pond beds with chlorine and quicklime;
4. flying ponds.

9. For which disease of fish is there no cure?

1. Saprolegniosis;
2. Ichthyophonosis;
3.Vibriosis;
4. Peptic ulcer and hemorrhagic septicemia.

10. What kind of fish disease is fumagilin used for?

1. filometroidosis;
2. cystidicolosis;
3. ligulosis;
4. Caviosis.

11. In what diseases of fish is formalin solution used?

1. byssus;
2. myxosporidiosis,
3. white-spotted disease;
4. Gas bubble disease.

12. In what diseases of fish is antibacterial-100 used?

1. aeromonoses;
2. mycobacteriosis;
3. corinosomiasis;
4. argulosis.

13. In which bee disease is apit paste used?

1. European rot;
2. case toxicosis;
3. protein starvation;
4. Frozen brood.

14. What kind of bee disease is quarantined on the farm?

1. fall toxicosis;
2. ascospherosis;
3. nosematosis;
4. American rotten.

PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.;

15. In what concentration are ammonia baths used against dactylogyrosis?

1. 0,2%;
2. 05%;
3. 00,1%;
4. 1%.

PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well;

16. In what concentration of saline solution is fish treated for ectoparasites?

1. 0,5%;
2. 1%
3. 5%
4. 0,01%.

17. How much bleach is required to disinfect 1g pond bed?

1. 5кг;
2. 0,5 кг;
3. 500 кг;

4. 50 кг.

18. What is the dosage of kanamycin in the treatment of fish from mycobacteriosis?

1. 10мг/кг рыбы;
2. 100 мг/кг рыбы;
3. 1мг/кг рыбы;
4. 1гр/кг рыбы.

PC-5 ID-4 To be able to administer drugs to the animals body in various techniques;

19. Where are pituitary drugs administered to fish in the pre-spawning period?

1. Intramuscularly;
2. With food;
3. In the form of baths;
4. Subconjunctively.

PC-5 ID-5 To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.;

20. What is the most effective treatment for osteosis?

1. salt baths;
2. Oxidizing agents;
3. formalin baths;
4. The treatment has not been developed.

21. Which antibacterial drug is used to enhance the immunity of fish, which can be used both for treating fish with water and for mixing into feed?

1. malachite green;
2. Methylene blue;
3. potassium permanganate;
4. Formalin.

22. What drug is used in the treatment of caviosis?

1. microsal, phenosal;
2. malachite green;
3. chlorophos;
4. Potassium permanganate.

23. What is the frequency of fish processing used for ichthyophthyriosis?

1. once?
2. several days in a row;
3. Once a month;
4. several times at regular intervals, depending on the abiotic factors and the development cycle of the parasite.

PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods

24. How is the therapeutic treatment of fish for saprolegniosis carried out:

1. bleach;
2. iodinol;
3. malachite green;
4. Chlorophosome.

25. What control measures are used for diseases caused by compound feeds, highly contaminated microorganisms?

1. a break in feeding for 10-15 days;
2. treatment with ultraviolet or infrared rays;

3. enrich the feed with additives containing minerals and vitamins.
4. The feed is diluted with good-quality feed.

26. What method of combating oversea phenomena is used in pond farms?

1. application of potassium permanganate;
2. adding malachite greens;
3. Adding methylene blue;
4. mixing antibiotics of the fluoroquinolone group into the feed.

27. What medicines are used for the treatment and prevention of non-infectious diseases of fish?

1. Ammonia;
2. ascorbic acid;
3. The VUS-2 vaccine;
4. Malachite green.

28. How can fish be cured of bacterial disease?

1. Antibiotics;
2. Vitamins;
3. Probiotics;
4. Prebiotics.

29. What kind of parasites are medicinal baths used to combat?

1. infusoria;
2. microsporidia;
3. mixosporidia;
4. Coccidia.

30. What diseases of bees are metronidazole used for?

1. nosematosis;
2. braulez;
3. varosis;
4. Chemical toxicosis.

31. How is microsal used for caviosis?

1. added to the feed;
2. in the form of baths;
3. in the form of injections;
4. Processing of the pond bed.

32. Method of use a solution of potassium permanganate in fish diseases:

1. Pond bed treatment;
2. in the form of injections;
3. added to the feed;
4. in the form of baths.

33. How is ascorbic acid solution used for fish?

1. in the feed;
2. in the form of baths;
3. Intranasally;
4. Treatment of affected areas.

34. How is chlorophos solution used?

1. added to the feed;
2. in the form of baths;
3. in the form of injections;
4. Processing of the pond bed.

35. Which drug can be used to prepare therapeutic solutions against pathogens of bacterial diseases?

1. Anti-tank-500;
2. alben;

3. krustacid;
4. Philomedes.

36. What drug is used for gyrodactelosis?

1. devastin;
2. Anti-tank-100;
3. Philomed;
4. Alben.

37. What disinfectants are used in fish farming?

1. Chloramine B;
2. furazolidone;
3. Purple "K";
4. Kanamycin.

38. What drugs are used in the treatment of pain toxicosis?

1. nosemapol;
2. Metronidazole solution;
3. There is no cure;
4. apit paste.

39. Which of the preparations for bees has an acaricidal effect?

1. varopol;
2. nosemacid;
3. mycozol;
4. Erythromycin.

40. What drugs are used to treat bee mycoses?

1. askosan, mikoask;
2. nosemapol;
3. varosan;
4. Sugar syrup solution.

3.2 Standard tasks for intermediate certification

3.2.1. List of questions for the test

PC-3 *To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods:*

ID-1 PC-3 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases;

1. The importance of ichthyopathology in the development of fish farming and nature conservation.
2. The role and importance of ichthyopathology for aquatic bioresources and aquaculture.
3. The history of ichthyopathology.
4. Bacterial diseases of cyprinid fish.
5. Bacterial diseases of salmon fish.
6. Viral diseases of salmon fish.
7. Viral diseases of cyprinid fish.

D-2 PC-3 To possess skills to use specialized information databases for the diagnosis of animal diseasesx;

8. Classification of toxins dangerous to fish.
9. Differences between acute and chronic aquatic toxicosis.
10. Sources of aquatic toxicosis.
11. Clinical signs of aquatic toxicosis.
12. . Methods of diagnosis of fish diseases.
13. Ways of spreading pathogenic agents.
14. The dynamics of epizootics.
15. The concept of a natural source of diseases.
16. Features of the formation of disease foci in aquaculture.

ID-3 PC-3 To possess skills to document the results of clinical animal studies, using digital technologies;

17. European rotten.
18. American rotten.
19. Mycoses of bees.
20. Bee aspergillosis..
21. Ascospherosis of bees.
22. Melanosis.
23. Acarapidosis of bees.
24. Bee disease.
25. Varroosis of bees.
26. Nosematosis of bees.

ID-4 PC-3 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.;

27. Rules for the selection of sick fish, pathological material, blood, feed and shipment for laboratory testing

ID-5 PC-3 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms;

28. Obtaining bee products, their physico-chemical properties.
29. The main products of beekeeping.
30. Features of the structure and physiology of bees.

ID-6 PC-3 To know the etiology and pathogenesis of animal diseases of various species.;

31. Cycles of development of fish parasites.
32. Specificity of fish parasites, forms of manifestation.
33. Myxosporidiosis of fish. Forms of existence, features of the life cycle. Pathogenic effects on the host.
34. Parasitic infusoria of fish. Features of biology. Pathogenic effects on the host
35. Monogenoidosis of fish. The structure and biology of monogenes. Pathogenic effects on the host.
36. Cestodoses of fish. Development cycles. Pathogenic effects on the host.
37. Trematodes of fish. Features of the structure, biology. Development cycles. Pathogenic effects on the host.
38. Acanthocephalosis of fish. Features of the structure, biology. Development cycles.
39. Nematodes of fish. Features of biology. Development cycles. Pathogenic effects on the host.
40. Parasitic crustaceans. Representatives of the copepod squad. Features of biology. The development cycle.

41. Parasitic gill-tailed crustaceans.. Features of biology. The development cycle. Pathogenic effects on the host.

ID-7 PC-3 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals disease.

42. Classification of non-infectious diseases of fish.
43. Alimentary diseases of fish, causes of development.
44. Fish diseases that occur when the environment deteriorates.
45. Classification of fish diseases.
46. Classification of invasive fish diseases.

PC-5 To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body:

PC-5 ID-1 To be able to use specialized information databases at a choice of animal treatment methods.;

47. Organization of the fight against fish diseases in Russia.

PC-5 ID-2 To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.;

48. In which diseases of non-infectious etiology are quarantined on the farm.
49. Assessment of economic damage caused by fish diseases.
50. Carrying out preventive measures for putrefactive diseases of bees.
51. For which infectious diseases bees are quarantined.
52. Health-improving measures for infectious diseases of bees

PC-5 ID-3 To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well;

53. Measures to prevent feed toxicosis of fish.
54. Vitamin premixes used in fish farming.

PC-5 ID-4 To be able to administer drugs to the animals body in various techniques;

55. Methods of fish vaccination.
56. Methods of administration of vitamins.

PC-5 ID-5 To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.;

57. The basic principles of preventive work in diseases of non-infectious etiology.
58. The basic principles of preventive work in diseases of non-infectious etiology.
59. The basic principles of the elimination of bee diseases of infectious etiology.

PC-5 ID-8 To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.

60. Drugs used for arachnosis of bees.
61. Carrying out health measures against invasive diseases and pests of bees.

4. METHODOLOGICAL MATERIALS DEFINING THE PROCEDURES FOR ASSESSING KNOWLEDGE, SKILLS AND ABILITIES AND WORK EXPERIENCE CHARACTERIZING THE STAGES OF COMPETENCE FORMATION

Criteria for evaluating students' knowledge during the knowledge survey (written survey):

• Mark "**excellent**" - the student clearly expresses his point of view on the issues under consideration, giving appropriate examples.

• Mark "**good**" - the student admits some errors in the answer

• The mark «**satisfactory**" - the student discovers gaps in knowledge of the basic educational and normative material.

• The mark "**unsatisfactory**" - the student discovers significant gaps in knowledge of the basic provisions of the discipline, the inability to obtain the correct solution to a specific practical problem with the help of a teacher.

Criteria for evaluating students' knowledge during testing:

• The test result is evaluated on a percentage rating scale. Each student is offered a set of test tasks of 25 questions:

• The mark "**excellent**" is 25-22 correct answers.

• The mark "**good**" is 21-18 correct answers.

• The mark "**satisfactory**" is 17-13 correct answers.

• The mark "**unsatisfactory**" is less than 13 correct answers

Criteria for evaluating students' knowledge in the preparation of reports:

• The mark "**excellent**" - the problem is identified and its relevance is justified; an analysis of various points of view on the problem under consideration is made and one's own position is logically stated; conclusions are formulated, the topic is fully disclosed, the volume is maintained; the requirements for external design are met, the basic requirements for the report are fulfilled.

• The mark "**good**" - mistakes have been made. In particular, there are inaccuracies in the presentation of the material; there is no logical consistency in judgments; the volume of the report is not maintained; there are omissions in the design, there are significant deviations from the requirements for the presentation of materials.

• The mark "**satisfactory**" - the topic is only partially covered; factual errors were made in the content of the report; there are no conclusions, the topic of the report is not disclosed.

• The mark "**unsatisfactory**" - there is a significant misunderstanding of the problem or the report is not submitted.

Criteria for evaluating students' knowledge when checking control papers:

• The mark "**excellent**" - the problem is identified and its relevance is justified; an analysis of various points of view on the problem under consideration is made and one's own position is logically stated; conclusions are formulated, the topic is fully disclosed, the volume is maintained; the requirements for external design are met, the basic requirements for the abstract are fulfilled

• The mark is "**good**" - mistakes have been made. In particular, there are inaccuracies in the presentation of the material; there is no logical consistency in judgments; the volume of the

abstract is not maintained; there are omissions in the design, there are significant deviations from the requirements for abstracting.

• The mark "**satisfactory**" - the topic is only partially covered; factual errors were made in the content of the abstract; there are no conclusions, the topic of the abstract is not disclosed

• The mark "**unsatisfactory**" - there is a significant misunderstanding of the problem or the abstract is not presented at all.

Criteria of knowledge during the examination:

• **The mark "excellent"** – all types of educational work provided for in the curriculum have been completed. The student demonstrates the compliance of knowledge, skills, and abilities with the indicators given in the tables, operates with acquired knowledge, skills, and applies them in various situations of increased complexity. At the same time, inaccuracies, difficulties in analytical operations, transfer of knowledge and skills to new, non-standard situations may be allowed. –

• **The mark "good"** – all types of educational work provided for in the curriculum have been completed. The student demonstrates the compliance of knowledge, skills, and abilities with the indicators given in the tables, operates with acquired knowledge, skills, and applies them in standard situations. At the same time, minor errors, inaccuracies, difficulties in analytical operations, transfer of knowledge and skills to new, non-standard situations can be made.

• **Mark "satisfactory"** – one or more types of educational work provided for in the curriculum have not been completed. The student demonstrates incomplete compliance of knowledge, skills, and abilities with the indicators given in the tables, significant errors are made, a partial lack of knowledge, skills, and skills are manifested in a number of indicators, the student experiences significant difficulties in operating with knowledge and skills when transferring them to new situations.

• **The mark "unsatisfactory"** – the types of educational work provided for in the curriculum have not been completed. demonstrate incomplete compliance of knowledge, skills, and abilities given in the tables of indicators, significant errors are made, a lack of knowledge, skills, and skills are manifested for a large number of indicators, the student experiences significant difficulties in operating with knowledge and skills when transferring them to new situations.

5. ACCESSIBILITY AND QUALITY OF EDUCATION FOR DISABLED PEOPLE

If necessary, persons with disabilities and persons with disabilities are given additional, time to prepare an answer for the test.
When conducting the procedure for evaluating the learning outcomes of disabled people and persons with disabilities, their own technical means can be used.

The procedure for evaluating the learning outcomes of disabled people and persons with disabilities in the discipline provides for the provision of information in forms adapted to the limitations of their health and perception of information:

For people with visual impairments:	– in printed form in enlarged font; – in the form of an electronic document.
For people with hearing impairments:	– in printed form; – in the form of an electronic document.

For people with disorders of the musculoskeletal system:	– in printed form, the device; – in the form of an electronic document.

When conducting the procedure for evaluating the learning outcomes of disabled people and persons with disabilities in the discipline, it ensures that the following additional requirements are met, depending on the individual characteristics of the students:

a) instructions on the procedure for conducting the assessment procedure are provided in an accessible form (orally, in writing);

b) an accessible form of assignment of assessment tools (in printed form, in printed form in enlarged font, in the form of an electronic document, assignments are read out by the teacher);

c) an accessible form of providing answers to tasks (written on paper, a set of answers on a computer, orally).

If necessary, for students with disabilities and the disabled, the procedure for evaluating the results of training in the discipline can be carried out in several stages.

The procedure for evaluating the learning outcomes of disabled people and persons with disabilities is allowed using distant learning technologies.