

Документ подписан простой электронной подписью
Информация о владельце:
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Должность: Ректор
Дата подписания: 27.05.2026 16:12:57
Уникальный программный ключ:
ca953a0120d891083f939673078ef1a989dae18a

**Federal State Autonomous Educational Institution of Higher Education
Peoples' Friendship University of Russia named after Patrice Lumumba
RUDN University**

Agrarian and Technological Institute

educational division (faculty/institute/academy) as higher education programme developer

COURSE SYLLABUS

Fish pathology and aquaculture

course title

Recommended by the Didactic Council for the Education Field of:

36.05.01 Veterinary

field of studies / speciality code and title

**The course instruction is implemented within the professional education programme
of higher education:**

Veterinary

higher education programme profile/specialisation title

1. COURSE GOAL(s)

The goal of the course «**Fish pathology and aquaculture**» is to prepare graduates for professional veterinary activities in the field of fish farming, to carry out work in veterinary laboratories, fish farms and specialized research institutes.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course (module) «**Fish pathology and aquaculture**» is aimed at the development of the following competences /competences in part:

Table 2.1. List of competences that students acquire through the course study

Competence code	Competence descriptor	Competence formation indicators (within this course)
PC-1	Ability to collect the life and medical history of an animal for further diagnosis and planning of therapeutic and preventive measures.	PC-1.1. Collects information on the animal's life history, including scheduled vaccinations, deworming and other preventive treatments.
		PC-1.2. Collects information on previous diseases, surgical interventions, existing chronic diseases and ongoing therapy.
		PC-1.3. Collects information on changes in the animal's condition during the course of disease, diagnostic and therapeutic procedures performed, medications used and physiotherapy methods.
PC-2	Ability to perform a complete primary clinical examination of an animal to establish a preliminary clinical diagnosis and repeated examinations to monitor the patient's condition.	PC-2.1. Complies with the techniques and procedures of clinical examination taking into account the animal species and its condition.
		PC-2.2. Identifies signs (symptoms) of deviations from normal function and recognizes standard combinations of signs (syndromes).
		PC-2.3. Records examination results in the patient's medical record or other medical documentation.
		PC-2.4. Assesses the initial degree of clinical symptom manifestation and its changes during patient supervision.
PC-10	Ability to analyze and adjust animal feeding to improve treatment effectiveness and prescribe therapeutic diets.	PC-10.1. Analyzes the animal's diet to identify factors contributing to disease development.
		PC-10.2. Justifies the use of therapeutic feeding for different diseases.
		PC-10.3. Recommends composition of therapeutic diets and nutrient balance.
		PC-10.4. Uses specialized software and databases for diet formulation.

3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course refers to the core/variable/elective* component of (B1) block of the higher educational programme curriculum.

Within the higher education programme students also master other (modules) and / or internships that contribute to the achievement of the expected learning outcomes as results of the course study.

Table 3.1. The list of the higher education programme components/disciplines that contribute to the achievement of the expected learning outcomes as the course study results

Competence code	Competence descriptor	Previous courses/modules*	Subsequent courses/modules*
PC-1	Ability to collect the life and medical history of an animal for further diagnosis and planning of therapeutic and preventive measures.	Clinical Diagnostics	Equine Diseases Diseases of Farm Animals Small Animal Diseases Bee Diseases and Entomophages Exotic Animal Diseases Educational Practice Clinical Internship Industrial Research Practice
PC-2	Ability to perform a complete primary clinical examination of an animal to establish a preliminary clinical diagnosis and repeated examinations to monitor the patient's condition.	Clinical Diagnostics	Equine Diseases Diseases of Farm Animals Small Animal Diseases Bee Diseases and Entomophages Exotic Animal Diseases Educational Practice Clinical Internship Industrial Research Practice
PC-10	Ability to analyze and adjust animal feeding to improve treatment effectiveness and prescribe therapeutic diets.	Animal Nutrition and Feeding with Basics of Feed Production	Fish Pathology and Aquaculture Equine Diseases Diseases of Farm Animals Small Animal Diseases Bee Diseases and Entomophages Exotic Animal Diseases Clinical Industrial Practice Clinical Internship Industrial Research Practice

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course is 2 credits (72 academic hours).

Table 4.1. Types of academic activities during the periods of higher education programme mastering (full-time training)

Type of academic activities	Total academic hours	Semesters/training modules			
		9	-	-	-
<i>Contact academic hours</i>	34	34	-	-	-
including:					

Type of academic activities		Total academic hours	Semesters/training modules			
			9	-	-	-
Lectures (LC)		-	-	-	-	-
Lab work (LW)		-	-	-	-	-
Seminars (workshops/tutorials) (S)		34	34	-	-	-
<i>Self-studies</i>		29	29	-	-	-
<i>Evaluation and assessment (exam/passing/failing grade)</i>		9	9	-	-	-
Course workload	academic hours	72	72	-	-	-
	credits	2	2	-	-	-

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
Module 1. General regulatory documents on fish diseases	Topic 1.1 General regulatory documents on fish diseases.	Seminars
	Topic 1.2 Significance for the State.	Seminars
Module 2. Viral diseases of fish	Topic 2.1 Fish vibriosis.	Seminars
	Topic 2.2 Spring viremia of carp (VVC).	Seminars
Module 3. Bacterial diseases of fish	Topic 3.1 Infectious necrosis of hematopoietic tissue of salmon.	Seminars
	Topic 3.2 Infectious necrosis of the salmon pancreas (VHS).	Seminars
Module 4. Mycoses of fish	Topic 4.1 Viral hemorrhagic septicemia of salmon.	Seminars
	Topic 4.2 Infectious anemia of salmon.	Seminars
Module 5. Protozoal diseases of fish	Topic 5.1 Inflammation of the carp swim bladder (RUNWAY).	Seminars
	Topic 5.2 Smallpox (papillomatosis, epithelioma) of carp.	Seminars
Module 6. Helminthiasis of fish. Monogenoidosis. Cestodoses	Topic 6.1 Aeromonosis.	Seminars
	Topic 6.2 Bacterial renal disease of salmon.	Seminars
Module 7. Helminthiasis of fish. Trematodoses. Nematodes	Topic 7.1 Yersiniosis.	Seminars
	Topic 7.2 Myxobacterioses.	Seminars
Module 8. Crustaceoses and other parasitoses	Topic 8.1 Pseudomonosis.	Seminars
Module 9. Non-communicable diseases of fish	Topic 9.1 Saprolegniosis.	Seminars
	Topic 9.2 Furunculosis.	Seminars
	Topic 9.3 Erythrodermatitis.	Seminars

Module 10. Veterinary-sanitary and preventive measures at fish farms.	Topic 10.1 Branchiomycosis. Deep mycosis.	Seminars
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6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Classroom equipment and technology support requirements

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
Seminar	A classroom for conducting seminars, group and individual consultations, current and mid-term assessment; equipped with a set of specialised furniture and technical means for multimedia presentations.	
Self-studies	A classroom for independent work of students (can be used for seminars and consultations), equipped with a set of specialised furniture and computers with access to the electronic information and educational environment.	

7. RESOURCES RECOMMENDED FOR COURSE STUDY

Main readings:

- Schislenko, S. A. Infectious diseases of fish: a textbook for universities / S. A. Schislenko. — Moscow : Yurayt Publishing House, 2021. - 225 p. — (Higher education). — ISBN 978-5-534-13787-3. — Text: electronic // EBS Yurayt [website]. — URL: <https://urait.ru/bcode/466888>
- Fish farming : textbook / V.I. Komlatsky, G.V. Komlatsky, V.A. Velichko. - 2nd ed., ispr. - St. Petersburg : Publishing House "Lan", 2018. - 200 p. : <https://lib.rudn.ru/MegaPro/Web/SearchResult/ToPage/464877>

Additional readings:

- Ichthyopathology : textbook / A.M. Ataev, M.M. Zubairova. - Electronic text data. - St. Petersburg : Lan, 2015. - 352 p. : <https://lib.rudn.ru/MegaPro/Download/MObject/5650>
- Diagnostics of diseases and veterinary examination of fish: an educational and methodical manual / K.S. Malovastyy. - St. Petersburg : Publishing House "Lan", 2013. - 512 p. : <https://lib.rudn.ru/MegaPro/Web/SearchResult/ToPage/465226>
- Ichthyology. Basic course : textbook / V.P. Ivanov, V.I. Egorova, T.S. Ershova. - 3rd ed., reprint. - St. Petersburg : Publishing House "Lan", 2017. - 360 p. : <https://lib.rudn.ru/MegaPro/Web/SearchResult/ToPage/464992>
- Physiology of fish : an educational and methodological guide. Book 2 : Nutrition and digestion / V.G. Skopichev, L.Y. Karpenko, I.O. Bogolyubova [and others] ; under the total. edited by V.G. Skopichev. - Electronic text data. - St. Petersburg : Quadro, 2017. - 344 p.
- Physiology of fish : a textbook. Book 1 : Physiology of blood and blood circulation of fish. Immune system of fish / L.V. Zhichkina, L.Y. Karpenko, M.K. Kasumov, V.G. Skopichev. - Electronic text data. - St. Petersburg : Quadro, 2017. - 200 p.

Internet sources

1. Electronic libraries (EL) of RUDN University and other institutions, to which university students have access on the basis of concluded agreements:

- RUDN Electronic Library System (RUDN ELS) <http://lib.rudn.ru/MegaPro/Web>
- EL "University Library Online" <http://www.biblioclub.ru>
- EL "Yurayt" <http://www.biblio-online.ru>
- EL "Student Consultant" www.studentlibrary.ru
- EL "Lan" <http://e.lanbook.com/>
- EL "Trinity Bridge"

2. Databases and search engines:

- electronic foundation of legal and normative-technical documentation <http://docs.cntd.ru/>
- Yandex search engine <https://www.yandex.ru/>
- Google search engine <https://www.google.ru/>
- Scopus abstract database <http://www.elsevierscience.ru/products/scopus/>

*Training toolkit for self- studies to master the course *:*

1. The set of lectures on the course «**Fish pathology and aquaculture**».
2. The laboratory workshop (if any) on the course «**Fish pathology and aquaculture**».

* The training toolkit for self- studies to master the course is placed on the course page in the university telecommunication training and information system under the set procedure.

DEVELOPER:

Associate Professor of the Department of Veterinary

Medicine

Position, Basic curriculum

Signature

Drukovsky S.G.

Full name.

HEAD OF EDUCATIONAL DEPARTMENT:

Department of Veterinary Medicine

Name Basic Curriculum

Signature

Vatnikov Yu.A.

Full name.

HEAD OF HIGHER EDUCATION PROGRAMME:

Director of the Department of Veterinary Medicine

Position, Basic curriculum

Signature

Vatnikov Yu.A.

Full name