Annotation of the selective educational component

Academic discipline	**Aquatic microbiology**
Lecturer	Iryna Rublenko doctor of veterinary sciences, Associate Professor, Department of Microbiology and Virology
The course and semester, when the discipline is planning to study	2nd course, 3rd semester
Faculties whose students are invited to study discipline	Ecological
List of competencies and learning-related outcomes that discipline provides	According to the requirements of the educational and professional program " Aquatic bioresources and aquaculture", students must acquire the ability to acquire the following competencies: *Integral competence:* - the ability to solve complex specialized tasks and practical problems in the field of aquatic bioresources and aquaculture on a learning process characterized by complexity and uncertainty of conditions, and involves the application of theories and methods of biology and applied sciences. *General competencies:* - knowledge and understanding of the subject area and understanding of the professional activity, - the ability to apply knowledge in practical situations, - the ability to learn and acquire modern knowledge, - the ability to identify, pose and solve problems. *Special competencies:* - the ability to influence the hydrochemical and hydrobiological parameters of the aquatic environment on the physiological state of aquatic living organisms. The result of training in the discipline is the acquisition by students of such knowledge and skills: - know and understand the form and structure of microorganisms, the principles of their classification, chemical composition, mechanisms of nutrition, respiration, and reproduction; - know the basics of the spread of microorganisms in nature, their role in the cycle of substances, the impact on the vital activity of plants, soil, products, and raw materials of fish origin, and the quality of feed for them; - know the main stages of development of aquatic microbiology, the discovery of pathogens of infectious diseases, patterns of infections; - be able to produce preparations, stain them, and conduct research on microorganisms in a living and fixed state; - be able to use nutrient media for cultivating microorganisms, carry out inoculations from the material on them, obtain a pure culture, study cultural, tinctorial, and biochemical properties; - be able to identify the obtained isolates; – know the main international and domestic regulatory

	documents, incl. food, and seafood. - to know bacteriological methods for studying the microflora of water, soil, and sources of pollution. - be able to isolate pathogenic and opportunistic microorganisms from the environment, fish raw materials, and methods for the prevention and control of infectious diseases in aquaculture.
Description of the discipline	
Preconditions necessary for the study of the discipline	The selective academic discipline "Aquatic microbiology" is based on the knowledge of such disciplines: "Morphology of fish", "Hydrochemistry" and "Hydroecology".
The maximum number of students who can study simultaneously	25 students
Lesson plans	**Lectures** 1. Subject, tasks, and role of aquatic microbiology and problems. 2. Morphology of microorganisms. 3. Physiology and chemical composition of microorganisms. Ecology of microorganisms. 4. Transformation of substances in water bodies. 5. Microflora of water, soil, air, and hydrobionts. Microflora of water bodies. 6. Biological purification of water by the biocenosis of microorganisms. 7. The doctrine of infection. 8. Aquaculture infectious diseases (oyster norovirus) **Practical classes** 1. Safety technique. Academic virtue. Bacteriological laboratory: tasks, rules of work, safety precautions and personal prevention. Immersion system of a light microscope. The technique of bacteriological research. Morphology of microbes. 2. Preparation of smears from cultures of microorganisms and the studied material. Simple and complex staining methods. 3. The mobility of microbes and methods for their study. Study of the morphology and systematic of fungi and actinomycetes in cultures and stationary preparations. Basic sterilization methods and sterilizing equipment. 4. Nutrient media. The technique of sowing and reseeding cultures of microorganisms. Methods for isolating pure cultures of aerobic and anaerobic microorganisms. 5. study of cultural parameters and enzymatic parameters of microbes. Identification and determination of the type of microorganisms. 6. Bacteriological study of water. 7. Sampling. Microbiological study of fish and shrimp. Virological study of oysters on norovirus. Determination of toxicity and toxigenicity of fish and other hydrobionts.
Teaching language	Ukrainian