

ANOTATION

Hydroradiobiology is a branch of biology that studies the effects of ionizing radiation on living organisms and their communities inhabiting aquatic environments. Additionally, hydroradiobiology examines the abiotic components of hydro-ecosystems and aquatic vegetation. The main objective of hydroradiobiology is to understand the general patterns of biological effects of ionizing radiation on aquatic organisms. According to the curriculum for the 2024–2025 academic year, 90 hours (3 ECTS credits) have been allocated for the study of the elective discipline "Hydroradiobiology" for students entering in 2024. This includes classroom hours: 30 hours for full-time students (10 hours of lectures and 20 hours of practical classes) and 6 hours for part-time students (2 hours of lectures and 4 hours of practical classes). Independent student work is allocated as follows: 60 hours for full-time students and 84 hours for part-time students.

Purpose of Studying the Educational Component:

The "Hydroradiobiology" course is designed to equip students with the necessary theoretical and practical knowledge regarding the distribution of radioactive elements in water bodies and the environment as a whole, the sources of environmental radioactive contamination, the impact of ionizing radiation on macrophytes, aquatic organisms, and humans, the organization and implementation of radiological control, fish farming in radioactively contaminated areas, radiation exposure standards for human organisms, and the safe handling of ionizing radiation sources and radioactive waste.

Prerequisites for Mastering the "Hydroradiobiology" Course:

The prerequisites for mastering the "Hydroradiobiology" course include previously acquired knowledge, skills, and competencies in educational components such as "Occupational Safety in Fish Farming," "Biological Monitoring of Aquatic Environments," "Intensive Technologies in Fish Farming," and "Farm Fish Farming."

Competencies. In accordance with the requirements of the "Standard of Higher Education of Ukraine for the Second (Master's) Level, Degree of Higher Education – Master, Field of Knowledge – 20 Agrarian Sciences and Food, Specialty – 207 Aquatic Bioresources and Aquaculture" and the educational and professional program "Aquatic Bioresources and Aquaculture," students must acquire the following competencies:

Integral Competence:

The ability to solve complex research and/or innovative problems in the field of aquatic bioresources and aquaculture.

General Competencies:

- Ability to use information and communication technologies.
- Ability to search, process, and analyze information from various sources.
- Ability to think abstractly, analyze, and synthesize.
- Ability to make informed decisions.
- Commitment to preserving the environment.
- Ability to learn and master modern knowledge.
- Ability to assess and ensure the quality of work performed.
- Special (Professional, Subject) Competencies:
 - Ability to analyze the ecological parameters of hydroecosystems in natural and artificial environments and anthropogenic impacts on them, based on critical understanding of problems in the field of agrarian sciences and food, and at the intersection of fields of knowledge.
 - Ability to integrate knowledge and solve complex problems in aquatic bioresources and aquaculture in broad or multidisciplinary contexts.
 - Ability to identify and utilize physiological and biochemical changes occurring in the organisms of aquatic organisms to ensure the effectiveness of fish farming technological processes in aquatic bioresources and aquaculture.

➤ Ability to clearly and unambiguously communicate knowledge, conclusions, and arguments related to problems in aquatic bioresources and aquaculture to both specialists and non-specialists, including students.

Learning Outcomes:

According to the educational and professional program and the "Standard of Higher Education of Ukraine for the Second (Master's) Level, Degree of Higher Education – Master, Field of Knowledge – 20 Agrarian Sciences and Food, Specialty – 207 Aquatic Bioresources and Aquaculture," the program learning outcomes include:

✓ Possessing specialized conceptual knowledge that includes modern scientific achievements in the field of aquatic bioresources and aquaculture, forming the basis for original thinking and conducting research.

✓ Finding the necessary information using various resources: journals, databases, open data, and other resources, analyzing and evaluating this information.

✓ Making effective decisions, taking responsibility, and working under critical conditions while performing production, technological, and scientific tasks in aquatic bioresources and aquaculture, analyzing and integrating alternatives, evaluating risks, and possible outcomes.

✓ Developing and implementing scientific and applied projects on issues of aquatic bioresources and aquaculture, and related interdisciplinary projects, taking into account production, legal, economic, and environmental aspects.