Abstract of a selective discipline

Name of the discipline	**Environmental Biotechnology in the Agricultural Complex**
Lecturer	Bityutskyy Volodymyr doctor of agricultural sciences, professor, head of the ecology and biotechnology department
The course and semester in which the study of the discipline is planned	2nd year, 3rd semester (masters)
Faculties where the students are offered to study the discipline	Faculty of Ecology
List of competencies and learning outcomes provided by the discipline	**Expected competencies:** *Integral competence:* Ability to solve complex tasks and problems of research and / or innovation in the field of aquatic bioresources and aquaculture General competencies GC01. Ability to use information and communication technologies. GC02. Ability to search, process and analyze information from various sources GC05. The desire to preserve the environment. Special competencies SC02. Ability to integrate knowledge and solve complex problems of aquatic bioresources and aquaculture in broad or multidisciplinary contexts. SC07. Ability to implement measures to protect aquatic bioresources and preserve fish health and prevent mass disease. **Learning outcomes of the discipline** Understand specialized conceptual information that includes modern scientific achievements of eco-biotechnology in the field of aquatic bioresources and aquaculture and is the basis for original thinking and research. Be able to plan and carry out scientific research related to aquatic bioresources and aquaculture using environmental biotechnology. Be able to develop applied aquaculture projects aimed at using eco-biotechnology to improve the efficiency of production processes; apply an interdisciplinary approach to the development of innovative solutions for aquaculture, including the achievements of environmental biotechnology. Identify, plan, develop and implement innovative eco-biotechnological processes in the production of aquaculture products and ensure their quality. To be able to use ecobiotechnology to improve the efficiency of technological processes in the field of agriculture. to develop eco-biotechnologies to improve the efficiency of technological processes in the agricultural sector.
Discipline description	
Prerequisites needed for studing the discipline	The elective educational component of the EPP “Environmental Biotechnology in the Agricultural Complex” is based on the knowledge of the educational components: “Chemistry (inorganic, analytical, physical, organic)”, ‘Hydroecology’, ‘Fundamentals of Biotechnology’, and is interrelated with ‘Aquatic Toxicology’, ‘Aquaculture

	Nanotechnology', 'Biotechnology in Aquaculture'.
The maximum number of students who can study at the same time	25 students
Topics of in-class activity	**Topics of lectures** Topic 1: Introduction to ecological biotechnologies in agricultural complexes Topic 2. Principles and techniques of bioremediation. Topic 3. The role of microorganisms in ecobiotechnology. Topic 4. Integration of aquaculture into agricultural complexes. Advantages of combined aquaculture and agriculture systems. Topic 5. Water quality control in the agricultural complex. Topic 6: Techniques of genetic modification of organisms. Regulatory and ethical aspects. Topics of practical classes 1: Safety rules and methods of work in the biotechnology laboratory. 2. Techniques of bioremediation of contaminated soils and waters 3. Biotests to assess the ecotoxicity of agrochemicals 4.Ecobiotechnologies for water quality monitoring in aquaculture systems. 5.Aquaculture: Bioremediation of aquatic environments 6. Application of biosensors to control aquaculture diseases. 7.Development of environmentally friendly feed for aquatic organisms using biotechnological methods. 8.Techniques of genetic modification and selection in aquaculture. 9.Production and application of biofuels from agricultural waste 10.Development and application of biopesticides in agriculture
Language of teaching	Ukrainian