

### Annotation of the selective educational component

<b>Name of the discipline</b>	<b>Basics of biotechnology</b>
<b>Lecturer</b>	Volodymyr Bitiutskyi Doctor of agricultural science, Professor Department of Ecology and Biotechnology
<b>The course and semester, when the discipline is planning to study</b>	2 <sup>nd</sup> course, 4 <sup>th</sup> semester, bachelor's level
<b>Faculties whose students are invited to study discipline</b>	Faculty of Ecology
<b>List of competencies and learning-related outcomes that discipline provides</b>	<p>The result of studying the discipline is the acquisition by students of the following knowledge and skills:</p> <p>Knowledge:</p> <ul style="list-style-type: none"> <li>- to know the main parameters for the development of biotechnological systems during the cultivation of objects of aquatic bioresources and aquaculture.</li> <li>- to apply theoretical knowledge in the field of biotechnology for the purpose of practical use during the cultivation of aquatic biological resources and aquaculture.</li> </ul> <p>Skills:</p> <ul style="list-style-type: none"> <li>- to be able to organize measures aimed at the application of biotechnological products in relation to methods of protection of aquatic biological resources and aquaculture.</li> <li>- to be able to analyze the results of the analysis of the degree of pollution of water bodies, the physiological-biochemical, ichthyopathological state of hydrobionts using biotechnological sensors, to evaluate the significance of indicators.</li> <li>- to present the results of my own theoretical and practical research.</li> </ul>
<b>Description of the discipline</b>	
<b>Preconditions necessary for the study of the discipline</b>	The selective academic discipline "Fundamentals of Biotechnology" is based on the knowledge of such disciplines as "Zoology", "Hydroecology" and is interconnected with the disciplines "Physiology and Biochemistry of Hydrobionts" and "Biological Basics of Fishery".
<b>The maximum number of students who can study simultaneously</b>	25 students
<b>Lesson plans</b>	<p><b>Lectures</b></p> <ol style="list-style-type: none"> <li>1. Introduction. Historical aspects of the development of biotechnology.</li> <li>2. Basic bio objects of biotechnology</li> <li>3. Pro- and eukaryotic cells. Genome organization in prokaryotes and eukaryotes</li> <li>4. Principles and tools of genetic engineering.</li> <li>5. Feed preparations for aquaculture.</li> <li>6 Engineering enzymology</li> <li>7. Immobilized enzymes.</li> <li>8. Biotechnology of production of biologically active substances</li> </ol>

<b>Teaching language</b>	<b>Practical classes</b> <ol style="list-style-type: none"><li>1. Biotechnological laboratory. Safety rules for work in a biotechnological laboratory. Laboratory equipment for biotechnological process</li><li>2. Methods of sterilization of laboratory utensils and nutrient media. Preparation of nutrient media for the cultivation of animal cells and tissues</li><li>3. Quantitative extraction of RNA, DNA, fragments, and derivatives.</li><li>4. Determination of the content of the target product by protein concentration, construction of a calibration graph</li><li>5. Immobilization of glucoamylase and study of the activity of immobilized and free enzymes</li><li>6. Preservation of the enzymatic activity of various forms of the enzyme under the action of denaturing factors - heavy metal ions</li><li>7. Study of the effect of the denaturing factor on the activity of the free and immobilized protosubtilin enzyme - the reaction (pH) of the medium</li></ol> Ukrainian
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