

## SUBJECT/COURSE SYLLABUS

1.	<p>Course name in Polish and English</p> <p style="text-align: center;"><b>Introduction to Biotechnology</b></p> <p>Wstęp do Biotechnologii</p>
2.	<p>Scientific discipline</p> <p><b>Medical sciences</b></p> <p><b>Biotechnology</b></p>
3.	<p>Language of instruction</p> <p><b>English</b></p>
4.	<p>Unit conducting the course</p> <p><b>Faculty of Biotechnology</b></p>
5.	<p>Type of course</p> <p><b>compulsory</b></p>
6.	<p>Field of study</p> <p><b>Biotechnology</b></p>
7.	<p>Level of study</p> <p><b>first-cycle</b></p>
8.	<p>Year of study</p> <p><b>1st</b></p>
9.	<p>Semester</p> <p><b>winter</b></p>
10.	<p>Course form and number of hours</p> <p><b>Lecture, 15 h</b></p>
11.	<p>Prerequisites in terms of knowledge, skills and social competences for the course:</p> <ul style="list-style-type: none"> <li>• <b>basic knowledge of biology, chemistry, and physics</b> (at the level of a high school graduate).</li> </ul>
12.	<p>Learning objectives for the course:</p> <p>The main objectives of the course are to:</p> <ul style="list-style-type: none"> <li>• understand the <b>interdisciplinary nature of biotechnology</b>;</li> <li>• explore how <b>various scientific disciplines contribute to the development of cell biology and biotechnology</b>;</li> <li>• identify <b>different specializations within the field of biotechnology</b>;</li> <li>• recognize the <b>importance of basic research</b> - specifically cell biology - for the <b>advancement of applied biotechnology</b>.</li> </ul>
13.	<p>Curriculum content:</p>

	<ul style="list-style-type: none"> <li>• <b>biotechnology as an interdisciplinary science</b>;</li> <li>• <b>current trends and directions</b> in biotechnological development;</li> <li>• <b>overview of primary metabolic pathways</b>;</li> <li>• <b>metabolites and bioproducts</b> of medical and industrial significance;</li> <li>• <b>regulatory mechanisms</b> in metabolite production;</li> <li>• <b>eukaryotic cell organization</b>: organelle functions and interactions;</li> <li>• <b>molecular and biochemical aspects</b> of cellular organization (e.g., signaling pathways);</li> <li>• <b>organelle dysfunction</b> in human disease and related biotechnological therapies.</li> </ul>	
14.	<p>Description of learning outcomes</p> <p>Student:</p> <ul style="list-style-type: none"> <li>• identifies the primary components of the immune system and explains their practical applications within cell biology and biotechnology;</li> <li>• describes eukaryotic cell structure and the specialized methods used to study them;</li> <li>• discusses the applications of eukaryotic cells in biotechnology, with a focus on cell cultures and advanced cell therapies;</li> <li>• demonstrates a comprehensive understanding of the pathway of a biotechnological product from initial scientific discovery to commercial application in medicine or industry;</li> <li>• recognizes and justifies the necessity for lifelong learning and professional development within the rapidly evolving fields of biotechnology and biomedicine.</li> </ul>	<p>Symbols for relevant directional learning outcomes:</p> <p>K1_W06, K1_W08, K1_W09, K1_U02</p> <p>K1_K01</p>
15.	<p><b>Recommended literature:</b></p> <ul style="list-style-type: none"> <li>• Clark DP., Pazdernik NJ., <b>Biotechnology</b>, Elsevier;</li> <li>• Thieman WJ., Paladino MA., <b>Introduction to Biotechnology</b>, Pearson;</li> <li>• Watson O. (ed.), <b>Molecular Biotechnology</b>, Callisto Reference.</li> </ul>	
16.	<p>Methods of verification of the assumed learning outcomes:</p> <ul style="list-style-type: none"> <li>• <b>Oral examination</b> (presentation of a selected biotechnological invention and the basic knowledge behind the discovery + discussion on the presented topic).</li> </ul>	
17.	<p>Conditions and form of credit for individual components of the course:</p> <ul style="list-style-type: none"> <li>• <b>passing the oral examination.</b></li> </ul>	
18.	<p>Student workload expressed in teaching hours and ECTS credits</p>	<p>number of hours allocated for the course of a given type of classes</p>

	classes (according to the study plan) with the instructor: <ul style="list-style-type: none"> <li>• <b>lecture</b></li> </ul>	<b>15 h</b>
	student's own work (including participation in group work) e.g.: <ul style="list-style-type: none"> <li>• reviewing recommended literature and course materials;</li> <li>• Preparation for the final oral examination.</li> </ul>	<b>20 h</b>
	Total number of class hour	<b>35 h</b>
	Number of ECTS credits:	<b>2 ECTS</b>