Learning outcomes of the programme:

1.	**Field of study**	**Biotechnology**
2.	Academic year of entry	2015/2016 (winter term)
3.	Level of qualifications/degree	first-cycle studies
4.	Degree profile	general academic

Code of the learning outcome of the programme	**Learning outcomes** The graduate:	Codes of the learning outcomes of the areas of education to which the learning outcome of the programme is related
	KNOWLEDGE	
1BT_W01	Identify the mathematical and statistical tools necessary to understand concepts of nature and the description of life processes	P1A_W01, P1A_W02, P1A_W06
1BT_W02	describe physical phenomena and identify the biophysical mechanisms occurring in nature	P1A_W01
1BT_W03	characterize inorganic and organic compounds, and assess the importance of carbon compounds for the functioning of life	P1A_W03
1BT_W04	explain chemical phenomena that occur in nature and recognize the basic rules governing chemical reactions	P1A_W03
1BT_W05	recognize the relationships between chemical, biological and physical processes occurring in nature	P1A_W03, P1A_W05
1BT_W06	explain and classify physical and chemical bases and mechanisms of the molecular processes of life	P1A_W03
1BT_W07	present the basic knowledge in the field of plant biotechnology, the biotechnology of microorganisms and related areas of natural sciences	P1A_W04
1BT_W08	explain the rules of inheritance using genetic and molecular description	P1A_W05
1BT_W09	describe and explain the differences in the structure and function of prokaryotic and eukaryotic cells	P1A_W04, P1A_W05
1BT_W10	recall and analyse the key functional dependencies between cell components and between cells; describe the organization of tissues and organs, and functional dependencies between them	P1A_W04, P1A_W05
1BT_W11	classify the basic physiological processes of microorganisms, plants and animals and recognize the processes specific to selected groups of organisms	P1A_W04, P1A_W05
1BT_W12	describe and interpret biodiversity, and understand its importance for biotechnology	P1A_W04, P1A_W05
1BT_W13	understand and evaluate the significance of experimental work in biotechnology, and define and describe the importance of molecular analyses in biological studies	P1A_W02
1BT_W14	explain the theoretical basis of experimental methods, and list and identify the most important techniques used in biotechnology	P1A_W02, P1A_W07
1BT_W15	provide examples and describe the use of technological aspects of biotechnology	P1A_W07
1BT_W16	explain the basic rules, methods and techniques for exploiting microorganisms, and other biotechnological tools in environmental protection	P1A_W07, P1A_W08
1BT_W17	describe the basic concepts connected with the use of in vitro cultures in plant and animal biotechnology and in studies on the basic processes of life	P1A_W07, P1A_W08
1BT_W18	present the basics of designing and carrying out genetic modification of biological materials	P1A_W07, P1A_W08
1BT_W19	demonstrate basic knowledge of the principles of creating and developing individual entrepreneurship, and understand the principles of research funding	P1A_W11
1BT_W20	demonstrate sufficient knowledge of vocabulary and grammar in English to enable passive and active communication	P1A_W05
1BT_W21	use English vocabulary and grammar at B2 level, including the use of basic scientific terminology in English in the field of biotechnology and related fields	P1A_W05
1BT_W22	apply the basics of information technology and the use of informatics to acquire and process information, (e.g. word processing, presentation, etc.).	P1A_W06
1BT_W23	present and interpret the basic principles of occupational health and safety and ergonomics	P1A_W09
1BT_W24	recognize and present the basic principles of industrial property and copyright protection, and apply patent information	P1A_W10
1BT_W25	indicate and apply basic concepts of other areas of biological and natural sciences in expanding knowledge in biotechnology	P1A_W04, P1A_W05
1BT_W26	indicate the interdisciplinary aspects of modern biotechnology and other natural sciences	P1A_W04, P1A_W05
1BT_W27	Posiada ogólną wiedzę na temat wybranych metod naukowych oraz zna zagadnienia charakterystyczne dla dyscypliny nauki niezwiązanej z kierunkiem studiów	A1_W11, H1A_W01, P1A_W01, S1A_W01, T1A_W03, X1A_W01

SKILLS		
1BT_U01	Use basic methods and techniques in experimental and molecular biology, genetic engineering and biotechnology	P1A_U01
1BT_U02	select and use the available sources of information, including electronic sources	P1A_U03
1BT_U03	undertake synthesis of data from different sources and draws conclusions	P1A_U07
1BT_U04	perform simple research and experiments specific to biological sciences and biotechnology under the guidance of the supervisor	P1A_U04
1BT_U05	use basic mathematical and statistical methods to describe and identify phenomena and for analysis of data	P1A_U05
1BT_U06	carry out, in the field or laboratory, simple physical, biological and chemical measurements and makes observations	P1A_U06
1BT_U07	obtain and characterize biological material	P1A_U01, P1A_U06
1BT_U08	demonstrate the ability to communicate and use English texts at the B2 level	P1A_U02, P1A_U09, P1A_U12
1BT_U09	apply basic specialised English vocabulary enabling the use of biological texts	P1A_U02, P1A_U08, P1A_U09, P1A_U10, P1A_U12
1BT_U10	design and develop scientific concepts in written and oral presentation formats in Polish, with the correct documentation	P1A_U08, P1A_U09, P1A_U10
1BT_U11	demonstrate the ability to work in a team	P1A_U06, P1A_U08
1BT_U12	learn independently in a targeted manner	P1A_U03, P1A_U07, P1A_U11
1BT_U13	use basic computer software in the studied discipline and everyday life	P1A_U05
1BT_U14	demonstrate good practice in health emergency situations	P1A_U01, P1A_U06
1BT_U15	apply market research to assess the need for products derived from biotechnology	P1A_U03, P1A_U07
1BT_U16	use knowledge from other areas of biological and natural sciences to expand knowledge of biotechnology	P1A_U03, P1A_U07, P1A_U11
1BT_U17	recognize interactions and relationships between biotechnology and other areas of biological and natural sciences	P1A_U07, P1A_U11
1BT_U18	Posiada umiejętność stawiania i analizowania problemów na podstawie pozyskanych treści z zakresu dyscypliny nauki niezwiązanej z kierunkiem studiów	A1_U09, H1A_U01, P1A_U01, S1A_U07, T1A_U04, X1A_U01
SOCIAL COMPETENCES		
1BT_K01	demonstrate interest and understanding of physical and chemical phenomena and processes in nature	P1A_K01
1BT_K02	develop an accepting attitude towards the use of mathematical and statistical methods in biotechnology	P1A_K01
1BT_K03	demonstrate responsibility for their own work and for equipment entrusted to them; practice their own work, respect others, and have a responsibility for occupation health in the workplace	P1A_K06
1BT_K04	show caution and critical evaluation of information available in the media relevant to life sciences and biotechnology achievements	P1A_K04
1BT_K05	practice effective teamwork	P1A_K02, P1A_K03
1BT_K06	show the need for constant updating of knowledge in biotechnology	P1A_K07
1BT_K07	understand the basic principles of ethical behaviour at work and life	P1A_K03, P1A_K04
1BT_K08	show a creative attitude at work	P1A_K08
1BT_K09	carry out objective self-assessment of their own work	P1A_K01, P1A_K03, P1A_K05, P1A_K07
1BT_K10	understand the need to inform the public about new developments in biotechnology, and pass on this information in an understandable way	P1A_K04
1BT_K11	develop an accepting attitude toward use of the English language as the primary carrier of information in life sciences	P1A_K05
1BT_K12	display a broad interest in the biological and life sciences	P1A_K07
1BT_K13	think and act in an entrepreneurial manner	P1A_K03, P1A_K08
1BT_K14	Rozumie potrzebę interdyscyplinarnego podejścia do rozwiązywanych problemów, integrowania wiedzy z różnych dyscyplin oraz praktykowania samokształcenia służącego pogłębianiu zdobytej wiedzy	A1_K01, H1A_K01, P1A_K01, S1A_K01, T1A_K01, X1A_K01