

<b>Programme: Bioanalytical technologies</b>
Level of studies: MSc
Polish Qualifications Framework PRK level: levels 7
Programme profile: practical profile
Field of science/arts: field of exact sciences and natural sciences
Discipline/Disciplines <sup>1</sup> : biological sciences - leading discipline
Learning outcomes for the cycle: 2022/2023

*Learning outcomes for general university courses (foreign language classes, physical education, entrepreneurship, university mission courses) are specified in the relevant resolutions of the Senate*

Symbol of the programme learning outcome	<b>Programme learning outcomes</b>	Reference to universal first stage descriptors – PRK levels 6-8 <sup>2</sup>	Reference to second stage descriptors - PRK levels 6-8 <sup>3</sup>
	<b>Knowledge: Graduate knows and understands</b>	<b>Descriptor symbol</b>	<b>Descriptor symbol</b>
K_W01	know the specific terminology used in life sciences, understands and is able to define complex phenomena and processes occurring in living organisms	P7U_W1	P7S_WG1
K_W02	demonstrate advanced knowledge of biochemistry, microbiology and biology necessary for practical applications in biotechnological processes used in various branches of industry	P7U_W1	P7S_WK2

1 In the case of programmes assigned to more than one discipline a leading discipline should be indicated.

2 Universal first stage descriptors for PRK levels 6-8 – Act of 22 December 2015 on the Integrated Qualifications System (Journal of Law of 2016, item 64).

3 Second stage descriptors for PRK levels 6-8 typical for qualifications awarded by higher education institutions – Regulation of MNiSW of 14 November 2018 r. - part I.

K_W03	knows appropriate methods for identifying, evaluating and managing project-related risks and unforeseen circumstances during the implementation's project life-cycle	P7U_W1; P7U_W2	P7S_WG1
K_W04	has deepen knowledge in terms of statistics giving the possibility to explain and interpret natural phenomena especially relevant for biotechnology as well as has knowledge of specialist computer tools	P7U_W1	P7S_WG1
K_W05	has knowledge of the principles of planning research using bioanalytical research techniques and tools	P7U_W1	P7S_WG1
K_W06	has deepen knowledge of the benefits and risks associated with the use of GMOs	P7U_W1; P7U_W2	P7S_WG1; P7S_WK1; P7S_WK2
K_W07	knows the fundamental principles o H&S and ergonomics	P7U_W2	P7S_WK2
K_W08	identify systemic solutions for quality assurance at the stage of development, production and quality control of a biotechnological product	P7U_W1; P7U_W2	P7S_WK2; P7S_WK3
K_W09	define forms and procedures for protection of intellectual and industrial property in the domain of biotechnology, as well as explain legal and ethical circumstances in biological sciences	P7U_W1; P7U_W2	P7S_WK2; P7S_WK3
K_W10	knows the ways of obtaining the National and European research funds and application projects	P7U_W2	P7S_WK2; P7S_WK3
K_W11	knows the general rules of the start-up, operation and development of individual entrepreneurship in range of biotechnology	P7U_W2	P7S_WK2; P7S_WK3
	<b>Skills: a graduate can</b>	<b>Descriptor symbol</b>	<b>Descriptor symbol</b>
K_U01	apply advanced techniques and research tools in the life sciences, particularly in biotechnology	P7U_U1	P7S_UW1; P7S_UW2; P7S_UW4
K_U02	proficiently uses literature in the field of natural sciences in the language as courses are provided and shows knowledge in specialised vocabulary in the field of biotechnology and bioanalytical technologies.	P7U_U1; P7U_U3	P7S_UW1; P7S_UK1; P7S_UK3
K_U03	critically select the available information, including those from the electronic sources and based on them to formulate reasonable judgments	P7U_U1	P7S_UW1; P7S_UW2; P7S_UW4

K_U04	apply statistical methods to interpret natural processes and analyze and verify results from laboratory analysis	P7U_U1	P7S_UW1; P7S_UW2; P7S_UW4
K_U05	prepare oral presentations and communicate to diverse audiences via different media channels, as well as initiate and conduct a debate on specialized topics	P7U_U3	P7S_UW1; P7S_UK1; P7S_UK2
K_U06	write a report on her/his own research activities in both native language and English	P7U_U1; P7U_U3	P7S_UW1; P7S_UW2; P7S_UW4; P7S_UK1; P7S_UK3
K_U07	design and conduct experiments and analysys under supervision	P7U_U1	P7S_UW1; P7S_UW2; P7S_UW4
K_U08	draft a protocol according to which the experiment is to be conducted, as well as accompanying documentation	P7U_U1	P7S_UW1; P7S_UW2; P7S_UW4; P7S_UK1; P7S_UO2
K_U09	apply in practice the principles of work in the aseptic conditions	P7U_U1	P7S_UW1
K_U10	implement intellectual property protection procedures along with collecting relevant patent information	P7U_U1	P7S_UW1
K_U11	identify industry domains within which the knowledge and/or skills acquired during his/her studies can be utilized	P7U_U1; P7U_U2	P7S_UW1; P7S_UU1
K_U12	evaluate and gauge environmental threats stemming from applied bio-technological solutions	P7U_U1	P7S_UW1
K_U13	analyze market in a range of products and services	P7U_U1	P7S_UW1
K_U14	collect and interpret experimental data and on that basis formulate appropriate conclusions	P7U_U1	P7S_UW1
K_U15	demonstrate responsibility in evaluating and estimating threats arising from applied research, as well as secure conditions for safe operations in a laboratory	P7U_U1	P7S_UW1; P7S_UO1; P7S_UO2
K_U16	regularly updates the knowledge in natural sciences and knows its practical application, understands the need to follow regularly the scientific literature as well as to familiarize with scientific journals to	P7U_U2	P7S_UU1

	deepen his/her knowledge		
K_U17	has deepened awareness of level of his/her knowledge and skills, understands the need for continuous personal and professional development and is open to modern technologies used in bioanalytics and guides others in this regard, demonstrate awareness of importance of life-long learning and need for continuous personal and professional development	P7U_U2	P7S_UU1
K_U18	prioritize tasks when planning a implementation project and scientific, can interact and work in a team undertaking different roles in it	P7U_U1; P7U_U2	P7S_UO1; P7S_UO2
K_U19	work effectively in a team at every level and, when needed, assume a role of a team-leader role	P7U_U1; P7U_U2	P7S_UO1; P7S_UO2
	<b>Social competence: a graduate is (ready to)</b>	<b>Descriptor symbol</b>	<b>Descriptor symbol</b>
K_K01	is aware of the meaning, value, and need to analyse the environment	P7U_K1	P7S_KK1; P7S_KO1; P7S_KO2; P7S_KR1
K_K02	evaluate benefits and risks of using biotechnological products	P7U_K1; P7U_K2	P7S_KO1; P7S_KO2
K_K03	is taking care on entrusted laboratory equipment, is able to gauge danger resulting from applied research methods	P7U_K1; P7U_K3	P7S_KK2; P7S_KO3; P7S_KR1
K_K04	identify and resolve ethical issues arising within the routine professional practice by maintaining high professional and ethical standards	P7U_K1; P7U_K2	P7S_KK1; P7S_KO1; P7S_KR1
K_K05	act in accordance with the principles of occupational health and safety	P7U_K1; P7U_K3	P7S_KK2; P7S_KR1
K_K06	examine entrepreneurial opportunities and the market in the field of biotechnology and bioanalytical technologies	P7U_K2	P7S_KO3