

Programme: BIOTECHNOLOGY
Level of studies: 1st degree studies
Polish Qualifications Framework PRK level: levels 6
Programme profile: general-academic profile
Field of science/arts: field of exact sciences and natural sciences
Discipline/Disciplines ⁱ : biological sciences

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	Programme learning outcomes	Reference to universal first stage descriptors – PRK levels 6-8 ⁱⁱ	Reference to second stage descriptors - PRK levels 6-8 ⁱⁱⁱ
	Knowledge: Graduate knows and understands	Descriptor symbol	Descriptor symbol
K_W01	presents terminology used in biotechnology, defines phenomena and biophysical, physiological and biochemical processes occurring in living organisms	P6U_W1	P6S_WG1
K_W02	describes issues in the field of physics, mathematics and chemistry required to understand and interpret basic natural phenomena and processes	P6U_W1	P6S_WG1
K_W03	presents knowledge in terms of statistics and computer science giving the possibility to describe and interpret natural phenomena especially relevant for biotechnology	P6U_W1	P6S_WG1
K_W04	presents knowledge about the development of biotechnology and its relation to other scientific disciplines	P6U_W1; P6U_W2	P6S_WG1; P6S_WK1
K_W05	presents knowledge in the field of laboratory techniques and research tools used in biotechnology	P6U_W1	P6S_WG1
K_W06	presents knowledge in the field of genetics and molecular techniques and describes their practical use, in particular in biotechnology	P6U_W1	P6S_WG1
K_W07	describes the metabolic processes of biological active substances	P6U_W1	P6S_WG1

K_W08	presents issues related biochemistry and biology required for practical use in biotechnological processes which are applied in food and pharmaceutical industry as well as in agriculture	P6U_W2	P6S_WK2
K_W09	presents the principles of health, safety work and ergonomics, indicates the psychophysical possibilities of a human in the work environment	P6U_W2	P6S_WK2
K_W10	presents the concepts and principles of protection of industrial property and copyright as well as ethical and other conditionings related to biotechnology, indicates the ways of use of patent information resources	P6U_W2	P6S_WK2
K_W11	presents principles of creating forms of individual entrepreneurship using knowledge in the field of biotechnology	P6U_W2	P6S_WK3
	Skills: a graduate can	Descriptor symbol	Descriptor symbol
K_U01	applies techniques and research tools in the field of biotechnology	P6U_U1	P6S_UW1
K_U02	carries out observations and performs physical, chemical and biological measurements	P6U_U1	P6S_UW1
K_U03	is able to use light microscope, independently prepares microscopic preparations; is able to carry out and document microscopic observations	P6U_U1	P6S_UW1
K_U04	conducts the cell and tissue cultures from plant and animal origin	P6U_U1	P6S_UW1
K_U05	performs analysis for the evaluation of parameters of cellular and humoral immune response	P6U_U1	P6S_UW1
K_U06	uses scientific literature and other sources of information, including electronic ones, in the language in which classes are conducted and other modern language	P6U_U1	P6S_UW1
K_U07	uses knowledge in the field of legal protection of intellectual property	P6U_U1	P6S_UW1
K_U08	describes, explains and interprets chemical and physicochemical phenomena at an advanced level	P6U_U1	P6S_UW1
K_U09	uses knowledge in the field of physical-chemical conditions of phase boundary in order to to describe and interpret life sciences phenomena	P6U_U1	P6S_UW1
K_U10	performs qualitative and quantitative analyzes by using classical and instrumental method	P6U_U1	P6S_UW1
K_U11	participates in the debate on biotechnology issues using scientific language	P6U_U3	P6S_UK2
K_U12	prepares an oral presentation in the language in which the classes are conducted and in another modern language using specialized terminology	P6U_U3	P6S_UK1
K_U13	prepares a written study on issues related to biotechnology sciences in the language in which classes are conducted and in another modern language using the scientific language	P6U_U3	P6S_UW1, P6S_UK1

K_U14	uses statistical methods and information technology to describe natural phenomena as well as to analyze and process experimental data	P6U_U1	P6S_UW1
K_U15	designs and performs research tasks or expertise in the field of chemistry, biochemistry and biology	P6U_U1	P6S_UW1; P6S_UO1
K_U16	initiates and implements the actions undertaken by him, working independently and in a team taking on various roles in it, properly defining priorities in the implementation of his or her tasks	P6U_U1	P6S_UO1; P6S_UO2
K_U17	learns independently in a targeted manner in the field of biotechnology, updates his knowledge and skills, applies new research techniques and plans his professional development	P6U_U2	P6S_UU1
K_U18	correctly concludes on the basis of data from various sources	P6U_U1	P6S_UW1
	Social competence: a graduate is ready to	Descriptor symbol	Descriptor symbol
K_K01	is prepared to evaluate his own knowledge and skills as well as obtained information, he complies ethical aspects in scientific research	P6U_K1	P6S_KK1; P6S_KR1
K_K02	identifies and explains the dilemmas associated with the development of biotechnology and the social and economic importance of biotechnology, makes use of expert opinions	P6U_K2	P6S_KK2
K_K03	follows professional ethics in dealing with people who are not specialists in the field of biotechnology	P6U_K1	P6S_KR1
K_K04	possesses appropriate habits required to the work in scientific laboratories especially in aseptic conditions, proceeds according to work safety regulations, knows how to react in states of danger	P6U_K1; P6U_K2	P6S_KR1
K_K05	actively participates in biotechnological projects including those implemented for the local community	P6U_K2	P6S_KR1; P6S_KO1; P6S_KO2; P6S_KO3
K_K06	presents the importance of intellectual honesty in own and other people's activities, adheres to the principles of intellectual property protection in particular with regard to solutions in the field of biotechnology	P6U_K1	P6S_KR1

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

ⁱⁱ 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).

ⁱⁱⁱ 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.