

DESCRIPTION OF THE LEARNING OUTCOMES

Faculty of **Biotechnology**

Course: **Biotechnology**

Disciplines:

- **medical science: 40%**
- **biomedical engineering: 22%**
- **biological sciences: 16%**
- chemical sciences: 10%
- others: 12%

Level of studies: **the 1st cycle**

Qualification level (**PQF** - Polish Qualifications Framework): **6th**

Education profile: **general academic**

Learning outcome symbol	Course learning outcomes for Biotechnology programme Upon successful completion of 1 st cycle studies in Biotechnology the graduate:	Reference to characteristics of the second level of PQF
KNOWLEDGE:		
K1_W01	make a qualitative and quantitative description of the basic biological phenomena and processes	P6S_WG
K1_W02	know and understand the importance of mathematical and statistical methods required for the description, interpretation of phenomena and processes, as well as biological experiments	P6S_WG
K1_W03	have basic knowledge of mathematics and physics, required for description, understanding and interpretation of the basic biological phenomena and processes	P6S_WG
K1_W04	have basic knowledge in various fields of chemistry, such as general, analytical, organic, biophysical chemistry, necessary for understanding and interpretation of biological processes	P6S_WG
K1_W05	have extensive knowledge in the field of biochemistry, know the structure, function and metabolism of proteins, carbohydrates, lipid compounds, nucleic acids, be able to integrate the knowledge gained at the level of the whole cell metabolism	P6S_WG
K1_W06	know the basic concepts, terms, techniques used in biochemistry, biotechnology and molecular biology, be versed in the development of the above-mentioned fields	P6S_WG
K1_W07	know computational methods known in the field of statistics, as well as computer tools allowing for data analysis and interpretation of the results	P6S_WG

K1_W08	have knowledge of the basic techniques and research tools used in biochemistry, molecular biology and biotechnology	P6S_WG
K1_W09	be able to link theoretical knowledge of biochemistry, biotechnology, molecular biology and microbiology with its practical application in industry, health care	P6S_WK
K1_W10	be familiar with the basic principles of health and safety and ergonomics procedures in the laboratory, know procedures of work with genetically modified organisms	P6S_WK
K1_W11	know and understand the basic concepts and principles of the protection of intellectual and industrial properties and copyrights, draw on the resources of patent information	P6S_WK
K1_W12	be familiar with the general principles of establishment and development of individual forms of entrepreneurship in biotechnology	P6S_WK

SKILLS:

K1_U01	apply basic physical, chemical and biochemical techniques necessary for studying biological processes	P6S_UW
K1_U02	have skills to grow cell cultures and genetic modification of microorganisms and cells of higher organisms	P6S_UW
K1_U03	read and understand scientific literature in the field of biochemistry, biotechnology, molecular biology and microbiology in English	P6S_UW
K1_U04	take advantage of the online resources and literature to obtain information on biotechnology	P6S_UW
K1_U05	carry out simple experiments or research expertise under the guidance of a tutor in the field of biotechnology, describe the results and present them in the form of a report	P6S_UW
K1_U06	use basic statistical methods and computer technology to describe biological phenomena and perform analysis of experimental data	P6S_UW
K1_U07	perform basic physical and chemical measurements in the laboratory	P6S_UW
K1_U08	make the synthesis of information from various sources and be capable of correct conclusions based on them	P6S_UW
K1_U09	use professional scientific language in discussions	P6S_UK
K1_U10	prepare writings in English, professional reports in the field of biochemistry, biotechnology and molecular biology	P6S_UK
K1_U11	know how to orally present in English reports of selected scientific issues and make discussions	P6S_UK
K1_U12	learn a given subject by himself, plan and implement own learning throughout life	P6S_UU

K1_U13	know how to work independently and as a part of team, cooperating in planning and organizing work, solving problems and performing scientific experiments	P6S_UO
K1_U14	speak English at level B2 as required by the European Framework of Reference for Languages and use professional scientific language in the field of medical and biological sciences	P6S_UK
K1_U15	speak Polish at level A2 as required by the European Framework of Reference for Languages	P6S_UK

SOCIAL COMPETENCES:

K1_K01	critically evaluate own knowledge and information, and understand the need for continuing education throughout the whole life, including broadening knowledge in biotechnology	P6S_KK
K1_K02	recognize the importance of knowledge and expert opinions in solving cognitive and practical problems	P6S_KK
K1_K03	understand the need for careful planning of tasks and scientific experiments, need for consulting with experts in case of problems in solving a problem	P6S_KK
K1_K04	recognize and address the ethical problems associated with biotechnology	P6S_KR
K1_K05	know and follow the rules of health and safety at work	P6S_KR
K1_K06	think and act in an entrepreneurial manner, participate in and co-organize learning process of others	P6S_KO