GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Basic Biotechnology, PG_00047872		
Field of study	Biomedical Engineering		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2025/2026
Education level	first-cycle studies	Subject group	Optional subject group Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	5	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Pharmaceutical Technology and Biochemistry -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Sławomir Milewski	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	15.0	0.0	0.0	45

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	45	3.0	27.0	75

Subject objectives

Getting knowledge in the field of basic aspects of pharmaceutical and medicinal biotechnology and getting skills in selected laboratory techniques and experimental methods in these fields

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W52] Knows and understands, to an advanced extent, selected aspects of chemistry and biochemistry, constituting general knowledge related to the field of study	The student has knowledge of microorganisms and the possibility of their use in biotechnological processes. The student knows the methods of obtaining biologically active substances using various technologies, methods of improving the properties of these substances and the possibilities of their use in industry, agricultrure, medical diagnostics and therapy The student has knowledge of molecular techniques and technologies used in the research of genetic material as well as in the design and modification of it	[SW1] Assessment of factual knowledge
[K6_U51] can conduct laboratory work connected with chemistry and biochemistry, specific to biomedical engineering	The student uses basic research tools and techniques relevant to biological and medical sciences. The student performs simple research tasks under the supervision of a research tutor.	[SU1] Assessment of task fulfilment

<table>
<tr><td>Subject contents</td><td>

- Subject and scope of biotechnology
- Public reception and ethical aspects of modern biotechnology
- GMO, biopesticides and biopolymers
- Biotechnology in environmental protection
- Types of cells used in biotechnology
- Basic techniques of genetic engineering - gene cloning, PCR
- Technologies of production of recombinant proteins and therapeutic nucleic acids
- Industrial biotechnological processes
- Methods of cultivation of mammalian tissue cultures
- Biotechnologies of antibodies construction and production
- Methods of tissue regeneration with use of stem and somatic cells
- Gene therapy and antisense strategy
- Nanobiotechnology

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<tr><td>Prerequisites and co-requisites</td><td>Knowledge of basic principles of biochemistry and biochemical experimental techniques</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Evaluation of the reports on experimental exercises</td><td>60.0%</td><td>20.0%</td></tr>
<tr><td>Written exam</td><td>60.0%</td><td>80.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Materials available for e-learning</td></tr>
<tr><td>Supplementary literature</td><td>J. Buchowicz, Biotechnologia molekularna, PWN W-wa 2007
O. Kayser, Podstawy biotechnologii farmaceutycznej, Wydawnictwo UJ, Kraków W-wa, 2006</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>Please discuss the principle of operation of the lactose operon.Please describe the types of stem cells.Please provide examples of beta-lactam antibiotics, what is their molecular target in bacterial cells.What are probiotics?</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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