



Subject card

Subject name and code	Basic Biotechnology, PG_00047872						
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2026/2027		
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_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		
	[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, agriculture, 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		

Subject contents	<ul style="list-style-type: none">• 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		
Prerequisites and co-requisites	Knowledge of basic principles of biochemistry and biochemical experimental techniques		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Evaluation of the reports on experimental exercises	60.0%	20.0%
	Written exam	60.0%	80.0%
Recommended reading	Basic literature	Materials available for e-learning	
	Supplementary literature	J. Buchowicz, Biotechnologia molekularna, PWN W-wa 2007 O. Kayser, Podstawy biotechnologii farmaceutycznej, Wydawnictwo UJ, Kraków W-wa, 2006	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	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?		
Work placement	Not applicable		

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