University of Gdańsk

Subject card

Subject name and code	Biotechnological processes in the chemical industry, PG_00080742						
Field of study	Chemical Business						
Date of commencement of studies	October 2024		Academic year of realisation of subject	2026/2027			
Education level	Bachelor's studies		Subject group	Obligatory subject group 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	6		ECTS credits	2.0			
Learning profile	academic		Assessment form	credit			
Conducting unit	Laboratory of Bionanotechnology -> Department of Molecular Biotechnology -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor	dr Joanna Jeżewska-Frąckowiak					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	45.0	0.0	0.0	45
	E-learning hours included: 0.0						
	Additional information: laboratory work, study visit - trip to an industrial plant (wastewater treatment plant), student presentation, test, report						
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	1.0	4.0	50		
Subject objectives	Familiarization with the issues of classical and molecular biotechnological processes in the chemical industry and application prospects molecular biotechnology methods.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BCHINŻ_K04] Demonstrates responsibility for the safety of her/ his own and others' work.	Working in a student team, the student plans an experiment in a biotechnology laboratory, applies GLP and Health and Safety principles.	[SK6] demonstration of practical skills [SK8] observation of student's independent or team work
[BCHINŻ_K02] Works individually demonstrating initiative and independence in actions, and effectively cooperates in a team, performing various roles in it.	Creates student teams in which they complete assigned tasks on time and correctly.	[SK2] presentation/project/paper/ report [SK6] demonstration of practical skills [SK8] observation of student's independent or team work
[BCHINŻ_U06] Proposes and makes simple devices, operations or unit processes related to the implementation of the technological process used in the chemical industry, taking into account material and energy balances.	Obtains biotechnological products using classical and molecular techniques, then characterizes them and/or prepares a balance sheet.	[SU2] presentation/project/paper/ report [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[BCHINŻ_U03] Plans, selects the appropriate research and measuring equipment and performs simple chemical experiments; analyses the results and draws conclusions based on them.	Conducts experiments planned in the lab program, documents and develops the results.	[SU2] presentation/project/paper/ report [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[BCHINŻ_K03] Independently sets or implements a set action plan specifying priorities for its implementation; critically assesses its progress.	The student plans and performs assigned tasks independently and in a group laboratory, manages time and available infrastructure.	[SK2] presentation/project/paper/ report [SK6] demonstration of practical skills [SK8] observation of student's independent or team work
[BCHINŻ_W07] Describes the construction and operating principles of basic scientific, technological and control-measuring apparatus.	The student knows the basic equipment and apparatus in the biotechnology laboratory.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[BCHINŻ_W05] Describes the life cycle of devices, facilities and technical systems as well as modern environment-friendly technical solutions.	The student knows the strategy for isolating and purifying a biotechnological product.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report

Subject contents

Preparation of microbiological media. Obtaining bacterial biomass of *Escherichia coli* cells. Obtaining bacterial proteins from *Escherichia coli* cells. Biotechnological production of rennet cheese. Field laboratory - sewage treatment plant, sludge processing, biogas production.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
multimedia presentation	50.0%	8.0%
test	51.0%	80.0%
report	30.0%	12.0%

Recommended reading

Basic literature	Klimiuk E., Łebkowska M.: Biotechnologia w ochronie środowiska, PWN, 2005 Glick, B.R., Pasternak, J.J., Patten, C.L.: Molecular biotechnology: Principles and applications of recombinant DNA. ASM PRESS, 2009 Libudzisz Z., Kowal K., Żakowska Z.: Mikrobiologia techniczna, tom 2, PWN 2008 Olańczuk-Neyman K.: Laboratorium z biologii środowiska, Wyd. PG, 1998
Supplementary literature	websites indicated by the teacher
eResources addresses	

Example issues/ example questions/ tasks being completed

single choice test and open/problem questions

Work placement

Not applicable

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