


KAPITAŁ LUDZKI
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez
 Unię Europejską w ramach
 Europejskiego Funduszu
 Społecznego

UNIA EUROPEJSKA
 EUROPEJSKI
 FUNDUSZ SPOŁECZNY


Course title		ECTS code	
Biotechnological processes in the chemical industry		13.3.0720	
Name of unit administrating study			
null			
Studies			
faculty	field of study	type	all
Faculty of Chemistry	Chemical Business	form	all
		specialty	all
		specialization	all
Teaching staff			
dr Joanna Jeżewska-Fraćkowiak			
Forms of classes, the realization and number of hours		ECTS credits	
Forms of classes		3	
Laboratory classes, Lecture		classes - 60 h	
The realization of activities		tutorial classes – 5 h	
classes outside UG premises, classroom instruction		student's own work – 10 h	
Number of hours		Total: 75 h - 3 ECTS	
Laboratory classes: 45 hours, Lecture: 15 hours			
The academic cycle			
2024/2025 summer semester			
Type of course		Language of instruction	
obligatory		polish	
Teaching methods		Form and method of assessment and basic criteria for evaluation or examination requirements	
<ul style="list-style-type: none"> - Experimental design Team work Conducting experiments Professional tour. Abstract and graphical abstract. - conducting experiments - designing experiments - group work - multimedia-based lecture 		Final evaluation <ul style="list-style-type: none"> - Graded credit - Examination 	
		Assessment methods	
		<ul style="list-style-type: none"> - written exam with open questions - Exam (activating tasks during the lecture, followed by final test). Final grade assessment (Conducting the experiments during laboratory part, documentation and final test) - assignment work – project or presentation - written exam (test) 	
		The basic criteria for evaluation	
		The basic criteria for evaluation or exam requirements Lecture: <ol style="list-style-type: none"> 1. Test and open questions exam. 2. Final grade consistent with the scale given in UG Study Regulations 3. Additional term for the students, who didn't achieve 51% of possible assessment points. Laboratory <ol style="list-style-type: none"> 1. Conducting the experiments during laboratory part, according to the given protocol. 2. Technological project with tasks divided between students. 3. Laboratory report in a written form. 4. Participation in the professional tour. Abstract and graphical abstract presented. 5. Test. 	
Method of verifying required learning outcomes			

Required courses and introductory requirements	
A. Formal requirements none	
B. Prerequisites none	
Aims of education	
Aims of education	
1. Presenting the topics given in lecture course contents.	
2. Presenting classical and molecular biotechnology processes in the chemical industry and molecular biotechnology applications perspective.	
Course contents	
Course contents	
A. Lecture topics:	
Biotechnology process definitions and elements. Biotechnological process design for the purpose of chemical industry. Conventional and genetically modified organisms and their industrial applications. Native and recombinant enzymes sources for different branches of industry.	
Characteristics of the chosen biotechnological processes in the chemical, pharmaceutical and plant protection products industry. Biotechnological processes in the waste management. Plants as bioreactors in the pharmacy. GMO, GMM main legal regulations in the biotechnological processes of the chemical industry.	
B. Laboratory topics:	
Biotechnological process of rennet cheese production. Microbiological composition of samples collected from the subsequent stages of the process.	
Biotechnological processes in the wastewater treatment.	
Bibliography of literature	
Bibliography of literature	
Literature required to pass the course	
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	
Extracurricular readings	
Libudzisz Z., Kowal K., Żakowska Z.: Mikrobiologia techniczna, tom 2, PWN 2008	
Olańczuk-Neyman K.: Laboratorium z biologii środowiska, Wyd. PG, 1998	
The learning outcomes (for the field of study and specialization)	Knowledge
	Knowledge
	Student knows the definitions of biotechnological process and its design principles, as well as biotechnological processes in different branches of the chemical, pharmaceutical and plant protection products industry.
	Student knows conventional and genetically modified organisms applied in the chemical industry.
Student describes the mechanisms of wastewater treatment as well as waste neutralization biotechnological methods	
Students knows basic principles of recruiting conventional and recombinant enzymes for industrial purposes.	
Student knows possibilities of genetically modified organisms applications in different branches of chemical industry, as well as GMO, GMM main legal regulations and detection methodology.	
Skills	Skills
	Skills
	1. Student is able to plan tasks of the experiment in the biotechnological laboratory, applying GLP and safety rules.
	2. Student plans biotechnological process of obtaining the product, involving usage of microorganisms and enzymes.
	3. Student microbiologically characterizes samples, collected from the different stages of biotechnological process.
	4. Student prepares written report of the performer laboratory work.
	5. Student prepares written report with documentation in a form of abstract and graphical abstract.
	Social competence
	Social competence
	1. Student understands need of further education.

- | | |
|--|---|
| | <ol style="list-style-type: none">2. Student carefully i critically expresses own opinions, bears in mind and values possibilities offered by modern biotechnology.3. Student realizes the spectrum of possible biotechnological methods applications in the chemical industry.4. Student plans and performs given tasks working independently and in team, is able to manage time and equipment. Prepares the schedule of tasks. |
|--|---|

Contact

j.jezewska-frackowiak@ug.edu.pl