

GDAŃSK UNIVERSITY

Subject card

Biotechnology and Lipid Technology, PG_00058261								
Biotechnology								
		Academic year of realisation of subject			2023/2024			
second-cycle studies		Subject group			Optional subject group Subject group related to scientific research in the field of study			
Full-time studies	Full-time studies		Mode of delivery			at the university		
1					Polish			
2		ECTS credits			6.0			
general academic profile		Assessment form			exam			
Department of Chemi					Ity of Chemistry			
Subject supervisor								
Teachers		dr hab. inż. Dorota Martysiak-Żurowska dr inż. Agata Sommer						
Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
Number of study hours	30.0	0.0	30.0	0.0		15.0	75	
E-learning hours inclu								
Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study		SUM	
Number of study hours	75	20.		55.0			150	
The aim of the course is for students to familiarizing with lipid biotechnology and technology in production processes of industrial importance in the food, fuel and pharmaceutical industries, as well as with the directions and possibilities of their development.								
Course out	come	Subject outcome				Method of verification		
[K7_U05] is able to apply instrumental methods of quantitative and qualitative analysis and studies on activity of biomolecules, select and apply diagnostic and analytical methods in the field of his/her specialty with particular emphasis on genetic, molecular and microbiological diagnostics and diagnostics based on antigen-antibody reaction		The student is able to use instrumental analysis methods to study the properties and profiles of lipid biomolecules using the latest analytical methods.			[SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject			
[K7_W07] knows issues related to plant and animal raw materials, their quality, impact on human health, processing technology and chemical and biological hazards resulting from process treatment and storage		Analyzes and defines properties nutritional and physicochemical properties of plant and animal raw materials and fatty products obtained from them. He is aware of the impact of their quality on human health.			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects			
biotechnological processes, understands the specificity of the		The student has knowledge of biotechnological and technological techniques used in the fat industry. Analyzes unit processes used in obtaining, modifying and refining of fats. Defines the goals and methods of obtaining lipids and their derivatives through biotechnology and their use in the food, pharmaceutical and technical industries. The student knows the possibilities and limitations of process design biotechnological.			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation			
	February 2023 February 2023 second-cycle studies Full-time studies 1 2 general academic pro- Department of Chemi Subject supervisor Teachers Lesson type Number of study hours E-learning hours inclu Learning activity Number of study hours Course out [K7_U05] is able to a instrumental method quantitative and qual analysis and studies biomolecules, select diagnostic and analy in the field of his/her particular emphasis or molecular and microid diagnostics and diag on antigen-antibody [K7_W07] knows issis plant and animal raw their quality, impact or health, processing te chemical and biologi products, possibilities limitations related to biotechnological prod understands the spe biotechnological prod	February 2023 second-cycle studies Full-time studies 1 2 general academic profile Department of Chemistry, Technolog Subject supervisor Teachers Lesson type Lecture Number of study 30.0 hours Participation in classes included plan Number of study 75 The aim of the course is for students processes of industrial importance in directions and possibilities of their du Course outcome [K7_U05] is able to apply instrumental methods of quantitative and qualitative analysis and studies on activity of biomolecules, select and apply diagnostics and analytical methods in the field of his/her specialty with particular emphasis on genetic, molecular and microbiological diagnostics and diagnostics based on antigen-antibody reaction [K7_W07] knows issues related to plant and animal raw materials, their quality, impact on human health, processing technology and chemical and biological hazards resulting from process treatment and storage [K7_W08] has a profound knowledge of methods of obtaining biotechnological products, possibilities and limitations related to the design of biotechnological processes, understands the specificity of the biotechnological processes,	February 2023 Academic y realisation second-cycle studies Subject gro second-cycle studies Mode of de 1 Language de 2 ECTS cred general academic profile Assessmer Department of Chemistry, Technology and Bioche Subject supervisor Teachers dr hab. inz. Du Lesson type Lecture Lesson type Lecture Lesson type Lecture Number of study hours 30.0 Number of study hours 0.0 Learning activity Participation in didactic classes included in study plan Number of study hours 75 The aim of the course is for students to familiarizing processes of industrial importance in the food, fuel directions and possibilities of their development. 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Dorota Martysiał Lesson type Lecture Tutorial Lesson type Lecture Tutorial Lesson type Lecture Tutorial Learning nours included: 0.0 E-learning hours included: 0.0 Learning activity Participation in didactic classes included in study plan Participation i consultation th processes of industrial importance in the food, fuel and pharmace directions and possibilities of their development. Course outcome Subject outcome IX-U05] is able to apply instrumental methods of quantitative and qualitative analysis and studies on activity of biomolecules, select and apply diagnostics and anglydical methods. 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Agata Sommer Lesson type Lecture Tutorial Laboratory Project Number of study 30.0 0.0 30.0 0.0 Learning nours included: 0.0 Eaerning activity Participation in didactic classes included in study plan Course outcome Subject outcome Self-st Number of study hours 75 20.0 55.0 Study the properties and profiles of fuel analysis methods to st study the properties and profiles of plant and animal raw materials, their quality, materials, their quality, materials, their quality, materials, their quality encolories and encolories of plant and animal raw materials, their quality, materials, and tefines propertie	February 2023 Academic year of realisation of subject 2023/2024 second-cycle studies Subject group Optional subject of Subject group relatives research in the field Full-time studies Mode of delivery at the university 1 Language of instruction Polish 2 ECTS credits 6.0 general academic profile Assessment form exam Department of Chemistry, Technology and Biochemistry of Food -> Faculty of Chemistry Subject supervisor dr hab. inz. Dorota Martysiak-Zurowska Teachers dr hab. inz. Dorota Martysiak-Zurowska dr inz. Agata Sommer Seminar Lesson type Lecture Tutorial Laboratory Project Seminar Number of study 30.0 0.0 30.0 0.0 15.0 hours Fatiopation in consultation hours Self-study Self-study The atim of the course is for students to familiary with lipid biotechnology and technology in processes of industrial importance in the field of fuel and pharmaceutical industries, as well as of directions and possibilities of their development. [SU4] Assessment of use methods and to (SU4] Assessment of use fuel do his/her specialty with particular emphasis on genetic, molecular, and mainytical methods. [SW1] Assessment of use knowledge gain subjecd	

Subject contents	Lecture: 1. Scopes of biotechnological activities used in obtaining, purifying, processing and modifying lipids. 2. Biotechnology in the edible fat industry. 3. Biotechnology in the production of biofuels. 4. Biotechnology in the production of detergent ingredients and lipid derivatives for the cosmetics industry. 5. Biotechnological use of lipids for pharmaceutical purposes. Liposome technology in basic research and clinical pharmacology. 6. Commercialized lipid-based products (including glycerol) produced biotechnologically 7. Technologies for extracting, purifying and modifying food fats. Lab: Biotechnological processes of fat modification (esterification) and analysis of the impact of these processes on the physicochemical properties of fats. The use of biotechnological methods for the degradation of waste animal and plant fats. Seminar Student presentations based on the most current articles in the field presented in the course.						
Prerequisites and co-requisites	Knowledge of the basics of food chemistry and food analysis.						
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade				
	seminar	60.0%	20.0%				
	laboratory	60.0%	30.0%				
	exam	60.0%	50.0%				
Recommended reading	Basic literature	 Biotechnologia żywności . WNT, pod red. W. Bednarski, A. Repsa Technologia Tłuszczów Jadalnych. Niewiadomski H. WNT, Warszawa, Surowce Tłuszczowe. Niewiadomski H. WNT, Warszawa, Lipid Biotechnology Ed. Tsung Min k., Gardner H. 					
	Supplementary literature	Current scientific articles on the issues of the subject, e.g. Journal of American Oil Chemists Society, Eur. J. Lipid Sci. Technol., INFORM (wyd. AOCS).					
	eResources addresses	Adresy na platformie eNauczanie: Biotechnologia i technologia lipidów 2023/2024 - Moodle ID: 33542 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33542					
Example issues/ example questions/ tasks being completed	Chemical and enzymatic interesterification of edible fats.Obtaining cocoa butter substitutes by fractional crystallization method.Microbial bioconversion of fat waste.Conditions for biocatalysis to obtain biosurfactants.						
Work placement	Not applicable						