



Subject card

Subject name and code	PCR FOOD TESTING, PG_00063504						
Field of study	BADANIE ŻYWNOŚCI TECHNIKĄ PCR						
Date of commencement of studies	October 2025		Academic year of realisation of subject			2026/2027	
Education level	second-cycle studies		Subject group			Optional subject group Specialty 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	2		Language of instruction			Polish	
Semester of study	3		ECTS credits			2.0	
Learning profile	general academic profile		Assessment form			assessment	
Conducting unit	Department of Chemistry Technology and Biotechnology of Food -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Paweł Filipkowski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	15.0	0.0	15.0	30
	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	30		5.0		15.0	50
Subject objectives	The student identifies and classifies pathogens and toxin-producing fungi in food and assesses their harmfulness. The student presents basic diagnostic systems used to detect adulteration in food. The student explains the principles of PCR.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[K7_U02] uses research methods used in biotechnology and related fields		Student uses PCR technology to identify			[SU1] Ocena realizacji zadania [SU2] Ocena umiejętności analizy informacji [SU4] Ocena umiejętności korzystania z metod i narzędzi [SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu	
	[K7_W03] selects methods using living organisms and biomolecules to produce and process consumer goods		The student is able to select and apply diagnostic and analytical methods within his/her specialization, with particular emphasis on molecular and microbiological diagnostics in food research.Can identify GMO soybeans according to the standard.			[SW1] Ocena wiedzy faktograficznej [SW3] Ocena wiedzy zawartej w opracowaniu tekstowym i projektowym	
	[K7_U05] proposes solutions to technological and scientific problems in biotechnology and related fields using experimental methods and bioinformatics, statistics and specialized databases		The student has broadened and in-depth knowledge of diagnostic and analytical methods within their specialization, with particular emphasis on molecular and microbiological diagnostics in food research.			[SU2] Ocena umiejętności analizy informacji [SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu [SU4] Ocena umiejętności korzystania z metod i narzędzi [SU5] Ocena umiejętności zaprezentowania wyników realizacji zadania	

Subject contents	Course content – laboratory DNA isolation from bacterial cells and from plant and animal materials. Practical use of PCR to detect selected pathogens in food and to identify the raw material composition of meat products and plant products. Analysis of food products for the presence of GMOs. Students will develop and present topics on the potential use of PCR-based molecular biology methods in food analysis for the presence of pathogens, toxigenic fungi, and GMOs, as well as for detecting adulteration in food products (e.g., meat products, coffee, marzipan). The advantages and disadvantages of these methods compared to conventional methods will be presented. Diagnostic kits for detecting pathogenic microorganisms found in food: Salmonella sp., Staphylococcus aureus, Listeria monocytogenes, Campylobacter jejuni, Yersinia enterocolitica, Clostridium botulinum, and Clostridium perfringens.		
Prerequisites and co-requisites	Knowledge of General Biotechnology. Enzymes. Molecular Biology. Genetic Engineering.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	y	60.0%	20.0%
	x	60.0%	51.0%
	z	60.0%	20.0%
	a	60.0%	9.0%
Recommended reading	Basic literature	BrońKaczmarska A., Furowicz A.J. Choroby odzwierzęce przenoszone drogą pokarmową. PZWL, Warszawa, 1999.	
	Supplementary literature	Kur J. Podstawy inżynierii genetycznej. Wydawnictwo PG, Gdańsk, 1994. Bala J.: Biologia molekularna w medycynie. Elementy genetyki medycznej. PWN, Warszawa, 2008. Abigail A. Mikrobiologia. PWN, Warszawa, 2005. Brown T.A. Genomy. PWN, Warszawa, 2005 Alberts B. Podstawy biologii komórki. PWN, Warszawa, 2007. Wojcierowski J. Genetyka medyczna. PWN, Warszawa, 2000. Wskazane, przez prowadzącego, artykuły oraz materiały dostępne w Internecie.	
	eResources addresses		
	Example issues/ example questions/ tasks being completed	PN wykrywania GMO	
Practical activities within the subject	Not applicable		

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