



Subject card

Subject name and code	Elucidation of Food With PCR, PG_00058291						
Field of study	Biotechnology						
Date of commencement of studies	February 2023		Academic year of realisation of subject		2023/2024		
Education level	second-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	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Chemistry, Technology and Biochemistry of Food -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Paweł Filipkowski				
	Teachers		dr inż. Paweł Filipkowski				
Lesson types and methods of instruction	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	Student identifies and classifies toksynotwórcze pathogens and fungi in food, and evaluates their significance. Presents the basic diagnostic systems used to detect adulteration in food. Explains the principles of PCR.						
Learning outcomes	Course outcome		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		Knows how to use PCR techniques in food testing		[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools		
	[K7_W01] has advanced knowledge of methods of genetic engineering and molecular genetics, functioning of the immune system and mechanisms of immune system response, diagnostic methods, and analytical methods in the area of specialty		has advanced knowledge of PCR diagnostic and analytical methods in the field of specialization		[SW3] Assessment of knowledge contained in written work and projects		
	[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		knows issues related to chemical and biological hazards in raw materials		[SW3] Assessment of knowledge contained in written work and projects		

Subject contents	Isolation of DNA from bacterial and plant origin or animal origin. The practical use of PCR to detect specific pathogens in food, and to identify the composition of meat and vegetable origin. Analysis of food products for the presence of GMOs. Development and presentation by students of issues relating to the possibility of using molecular biology methods based on PCR analysis of the food in the presence of pathogens, fungal toxin, GMOs and to detect adulteration of food products (eg meat, coffee, marzipan). Presentation of the advantages and disadvantages of these methods compared with classical methods used. Diagnostic kits for the detection of pathogens in food: <i>Salmonella sp</i> , <i>Staphylococcus aureus</i> , <i>Listeria monocytogenes</i> , <i>Campylobacter jejuni</i> , <i>Yersinia enterocolitica</i> , <i>Clostridium botulinum</i> , <i>Clostridium perfringens</i> . <i>Gamification</i>		
Prerequisites and co-requisites	Knowledge of the subjects Molecular Biology, Genetic Engineering.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Oral exam	60.0%	50.0%
	Report	60.0%	20.0%
	The content of the presentation	60.0%	20.0%
	The form of presentation	60.0%	10.0%
Recommended reading	Basic literature	BrońKaczmarek 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. Wojciorowski J. Genetyka medyczna. PWN, Warszawa, 2000. Internet.	
	eResources addresses	Adresy na platformie eNauczanie: '23/'24 Badanie żywności techniką PCR - Moodle ID: 34031 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34031	
Example issues/ example questions/ tasks being completed	Composition of the mixture Temperature-time profile		
Work placement	Not applicable		