



## 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	<p>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.</p> <p>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>.</p> <p><i>Gamification</i></p>																	
Prerequisites and co-requisites	Knowledge of the subjects Molecular Biology, Genetic Engineering.																	
Assessment methods and criteria	<table border="1" data-bbox="451 539 1487 719"> <thead> <tr> <th data-bbox="451 539 794 577">Subject passing criteria</th> <th data-bbox="794 539 1137 577">Passing threshold</th> <th data-bbox="1137 539 1487 577">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="451 577 794 616">Oral exam</td> <td data-bbox="794 577 1137 616">60.0%</td> <td data-bbox="1137 577 1487 616">50.0%</td> </tr> <tr> <td data-bbox="451 616 794 654">Report</td> <td data-bbox="794 616 1137 654">60.0%</td> <td data-bbox="1137 616 1487 654">20.0%</td> </tr> <tr> <td data-bbox="451 654 794 692">The content of the presentation</td> <td data-bbox="794 654 1137 692">60.0%</td> <td data-bbox="1137 654 1487 692">20.0%</td> </tr> <tr> <td data-bbox="451 692 794 719">The form of presentation</td> <td data-bbox="794 692 1137 719">60.0%</td> <td data-bbox="1137 692 1487 719">10.0%</td> </tr> </tbody> </table>			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%
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Recommended reading	<p>Basic literature</p> <p>Supplementary literature</p> <p>eResources addresses</p>	<p>BrońKaczmarek A., Furowicz A.J. Choroby odzwierzęce przenoszone drogą pokarmową. PZWL, Warszawa, 1999.</p> <p>Kur J. Podstawy inżynierii genetycznej. Wydawnictwo PG, Gdańsk, 1994.</p> <p>Bala J.: Biologia molekularna w medycynie. Elementy genetyki medycznej. PWN, Warszawa, 2008.</p> <p>Abigail A. Mikrobiologia. PWN, Warszawa, 2005.</p> <p>Brown T.A. Genomy. PWN, Warszawa, 2005</p> <p>Alberts B. Podstawy biologii komórki. PWN, Warszawa, 2007.</p> <p>Wojciorowski J. Genetyka medyczna. PWN, Warszawa, 2000.</p> <p>Internet.</p> <p>Adresy na platformie eNauczenie: '23/'24 Badanie żywności techniką PCR - Moodle ID: 34031 <a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=34031">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=34031</a></p>																
Example issues/ example questions/ tasks being completed	Composition of the mixture Temperature-time profile																	
Work placement	Not applicable																	