GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	PCR FOOD TESTING, PG_00063504		
Field of study	Biotechnology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
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 -> Wydziały Politechniki Gdańskiej		
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

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_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.	[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information
[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.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
[K7_U02] uses research methods used in biotechnology and related fields	Student uses PCR technology to identify	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment

Subject contents	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
x	60.0%	51.0%
y	60.0%	20.0%
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
Work placement	Not applicable

Document generated electronically. Does not require a seal or signature.