GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Forensic Chemistry in Ensuring Food Quality, PG_00069249		
Field of study	Biotechnology		
Date of commencement of studies	February 2026	Academic year of realisation of subject	2026/2027
Education level	second-cycle studies	Subject group	
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	3.0
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	prof. dr hab. inż. Agnieszka Bartoszek-Pączkowska	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	30.0	0.0	0.0	0.0	45

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	45	5.0	25.0	75

Subject objectives

The purpose of the course is to familiarise students with the topic of ensuring the food quality, including health quality, and food adulteration. The methods applied in the food quality control embrace different analytical and bioanalytical techniques which serve the purpose of detection of undesirable substances or those not declared by the producers other contaminants in food products. The biological tests are employed to detect the remains of foreign organisms or substances posing health risk. in the era of global trade, the meaning of this knowledge increases to protect consumers.

The course is addressed to students of specialisations: BT, Ch, TCh.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W04] selects methods of data analysis, including bioinformatics, statistical and molecular modeling, useful for solving technological and scientific problems in biotechnology and related fields	Student knows of choosing the adequate methods of detection of contamination or adulteration of foodstuffs according to specificity of a particular food component.	[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 can apply experimental methods used in forensic chemistry for food quality assessment.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
[K7_U08] prepares documentation of experiments and technological processes using professional terminology in biotechnology and related fields	Student can prepare the report based on assessment of food contamination or adulteration along with reference to legislation.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task
[K7_K01] understands the need to constantly update knowledge based on the state of the art in accordance with the latest scientific literature, improve professional skills and the importance of teamwork	Student understands the significance of proper food quality for consumers' wellbeing.	[SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice
[K7_W01] defines the phenomena, processes and laws of living nature applied to the production of useful goods and the carrying out of services	Student knows theoretical foundations of methods employed in food quality assessment.	[SW1] Assessment of factual knowledge

Subject contents

Course content – lecture

Topics realized during lectures

Lectures will constitute a series of presentations dedicated to particular threats to quality and food adulteration along with reference to legal requirements. Each lecture will begin with presentation of examples of one type of registered anomaly detected in food products in recent years. Then, the sources of such substances will be discussed and health risk and/or economical risk that a given anomaly poses to consumer as well as methods of detection and assessment of such risks. The discussed groups of substances or other factors which are often behind food contamination and are legally monitored embrace: all types of pesticides, heavy metals and other toxic metals in food and potable water, microplastic and other mechanical contaminants, carcinogens and endocrine disruptors, air pollutants such as PMC entering food chain, nitrogen compounds and other inducers of food intolerance, food packaging as a source of contaminants. Some lectures will present known purposeful acts of food producers, which may mislead consumers, in particular those associated with food adulteration or not scientifically based health claims, e.g. in the case of food supplements.

Prerequisites and co-requisites

Accomplished courses in organic and analytical chemistry as well as biochemistry.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Lectures	50.0%	70.0%
Laboratories	60.0%	30.0%

Recommended reading

Basic literature	Bezpieczeństwo i jakość żywności, Stanisław Kowalczyk, PWN and portal gov.pl dedicated to food safety.
Supplementary literature	Textbooks and internet pages dedicated to the topic of food safety and quality.
eResources addresses	

Example issues/ example questions/ tasks being completed

What does it mean food adulteration?

List the most frequent food contaminats.

What substances appearing in food may pose health risk to consumers?

Practical activites within the subject

Not applicable

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