GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Food Analysis, PG_00037510		
Field of study	Biotechnology		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2025/2026
Education level	first-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	4	Language of instruction	Polish
Semester of study	7	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 -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Hanna Staroszczyk	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	30.0	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	3.0	27.0	75

Subject objectives

To familiarize students with the principles of food law applicable in the world and in the European Union and analytical methods used to assess the quality of food, as well as to detect some food adulteration.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U09	The student knows the methods of analysing food components. He/ she has the knowledge necessary to interpret the results.	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools
K6_W09	The student knows the methods of analysing food components. He/ she has the knowledge necessary to interpret the results.	[SW3] Assessment of knowledge contained in written work and projects
K6_K02	The student can justify the importance of the development of science and technology for the food economy development.	[SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice

Subject contents	Lecture: The role of food component analysis in the control and improvement of technological processes and end product quality. An overview of food laws and regulations in the European Union and Poland. The role of the FAO/WHO Codex Alimentarius. The nature and the scope of application of methodological standards at the global and European level. Official food control systems in the European Union. Classification and description of food analysis methods. Food adulteration and detection methods. Selected problems in food analysis: sampling, the use of gas chromatography in identifying aromatic substances, pesticides, fatty acids, cholesterol oxidation products, the degree and type of fat modification, chocolate adulteration the use of animal fat instead of vegetable fat, butter adulteration the use of natural and modified vegetable fat instead of animal fat. The use of thin layer chromatography, high-performance liquid chromatography and high-performance size-exclusion chromatography for determining sugars, the products of thermo-oxidatively altered fats, protein hydrolysis products, synthetic antioxidants. The use of isotopic methods for determining water and sugars added to fruit juice. The use of spectroscopic methods for analyzing food dyes, vitamins, and proteins, and for determining the authenticity of extra virgin oils. The use of differential scanning calorimetry and nuclear magnetic resonance in modified fat analyses. Sensory analyses in the evaluation of food quality: rudimentary knowledge. Physiology of the senses used in sensory analyses. Factors affecting the results of sensory analyses (analytical environment). Sensory analytical methods. Laboratory methods: determination of threshold values, differential tests, multiple comparison method, ranking method, scaling method. Quality control methods: determination of standards, point grading, determination of quality classes, analyzing the stability of quality attributes, instrumental methods. Consumer evaluation methods: surveys, hedonic scale method. Statistical methods applied in sensory analyses. Laboratory: Determination of phenolic compounds, pigments and minerals in food. Test the quality of selected food products by methods of chemical and sensory analysis .
Prerequisites and co-requisites	Knowledge gained by studying the courses of Analytical Chemistry (background of instrumental methods) and Organic Chemistry

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Laboratory exercises	60.0%	30.0%
Tests from lectures	60.0%	70.0%

Recommended reading

Basic literature	Actual standards and Commission Regulations (EC)
Supplementary literature	Baryłko-Pikielna N., Matuszewska I. Sensoryczne badania zywnosci. WN PTTŻ, Kraków 2014.
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

Determination of food saccharides

Determination of food proteins

Methods for testing fat quality.

Analysis of water content in food.

Work placement

Not applicable

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