



Food Analysis
Educational subject description sheet

Basic information

Field of study Food technology and human nutrition		Education cycle 2022/23
Speciality -		Subject code ND000000NTZS.I4BO.0723.22
Department The Faculty of Biotechnology and Food Science		Lecture languages english
Study level First-cycle (engineer) programme		Mandatory optional
Study form Full-time		Block major subjects (conducted) in foreign languages
Education profile General academic		Disciplines Food technology and nutrition
		Subject related to scientific research Yes
		Subject shaping practical skills No
Teacher responsible for the subject	Agnieszka Tajner-Czopek	
Other teachers conducting classes	Joanna Miedzianka	
Period Semester 3	Examination exam	Number of ECTS points 5.0
	Activities and hours lecture: 15 laboratory classes: 30	

Goals

C1	The aim of the subject is to acquaint students with the basis of the food analysis. The lectures include topics relating to sensory analysis and organoleptic evaluation, food quality, standardization, as well as techniques for the determination of selected chemical components (eg.: water, ash), compounds, eg.: acrylamide and quality characteristics of food. At the laboratory exercises, students have the opportunity to assess the quality of selected raw materials and food products, the determination of the physicochemical properties of the foods, using appropriate methods.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student knows and understands in an advanced level facts and concepts of chemistry, biochemistry, microbiology, mathematics, physics adapted to the direction of food technology and human nutrition.	NT_P6S_WG01	written exam, observation of student's work, practical training report
W2	Student knows and understands in an advanced level the issues related to the properties of raw materials and products of plant and animal origin.	NT_P6S_WG03	written exam, observation of student's work, practical training report
W3	The student knows and understands techniques, methods and tools, unit operations and technologies used in food processing.	NT_P6S_WG07	written exam, observation of student's work, practical training report
W4	Student knows and understands basic techniques of food analysis (physicochemical, microbiological, toxicological, sensory) and the principles of food standardization.	NT_P6S_WG12	written exam, observation of student's work, practical training report
Skills - Student can:			
U1	Student is able to apply appropriate physical, chemical, biological and sensory techniques using laboratory equipment and control and measurement apparatus used in food analysis and to prepare and interpret the obtained results.	NT_P6S_UW02	active participation, performing tasks, practical training report
U2	Student is able to interpret physicochemical and biological phenomena occurring during processing and storage of raw materials and food products.	NT_P6S_UW03	active participation, performing tasks, practical training report
U3	The student is able to use professional terminology in a foreign language	NT_P6S_UK14	written exam, active participation, performing tasks, practical training report
Social competences - Student is ready to:			
K1	Student is ready to critical assessment of their knowledge and skills, is aware of the progress and developments in the disciplines of food technology and human nutrition.	NT_P6S_KK01	active participation, performing tasks, practical training report
K2	Student is ready to demonstrate an active attitude and use of knowledge to address different challenges in food technology and human nutrition.	NT_P6S_KO02	active participation, performing tasks, practical training report

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
laboratory classes	30	
exam / credit preparation	27	
exam participation	1	
consultations	2	
lesson preparation	30	
report preparation	21	
Student workload	Hours 126	ECTS 5.0
Workload involving teacher	Hours 48	ECTS 1.9
Practical workload	Hours 51	ECTS 2.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	<p>Titles of lectures:</p> <ol style="list-style-type: none"> 1. Tasks of food analysis. Analytical laboratory. 2. Basics of organoleptic evaluation 3. Basics of sensory analysis 4. The quality of food products 5. Method of sampling for analysis; measurement techniques. 6. Methods of determination of dry matter (dry substance) in food products. 7. Factors influencing the accuracy of the measurement of water content in food 8. Analysis and evaluation of the content of valuable ingredients in food 9. The density of liquid food products. <p>Determination methods.</p> <ol style="list-style-type: none"> 10. Determination of acidity of selected food products. 11. Methods of starch content determination in food products. 12. Acrylamide in food. Methods for determining the content of a toxic compound. 13. Methods for the determination of non-starch polysaccharides (dietary fiber). 14. Determination of the content of selected minerals in food 15. Methods of determination of protein content in food. 	lecture

2.	<p>Titles of classes:</p> <p>Ex. 1 - Basics of organoleptic and sensory evaluation Ex. 2 - Assessment of selected food quality indicators (color and consistency) Ex. 3 - Determination of dry substance and starch content in selected food products Ex. 4 - Determination of the density, viscosity and acidity of selected food products Ex. 5 - Determination of the content of non-starch polysaccharides (with particular emphasis on dietary fiber) Ex. 6 - Determination of ash content in selected food products Ex. 7 - Determination of vitamin C content in selected food products Ex. 8 - Treatment of outstanding classes and completion of exercises (labs).</p>	laboratory classes
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Course advanced

Teaching methods:

teamwork, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	60%
laboratory classes	observation of student's work, active participation, performing tasks, practical training report	40%

Entry requirements

Organic and inorganic chemistry, mathematics, physics

Literature

Obligatory

1. Nielsen S., Food Analysis. 2017 (corrected publication 2019) Springer US. (pdf.)
<https://link.springer.com/content/pdf/10.1007%2F978-3-319-44127-6.pdf>
2. Sehgal S. A Laboratory Manual of Food Analysis. (1-ed.). 2016
3. Otle S. Methods of Analysis of Food Components and Additives. (2-ed). CRC Press. 2016

Optional

1. Sciences journals: Food Chemistry, Food Quality & Preference, Food Control

Effects

Code	Content
NT_P6S_KK01	Critical assessment of their knowledge and skills, is aware of the progress and changes in the discipline of food technology and human nutrition
NT_P6S_KO02	Demonstrate an active attitude and use knowledge to solve various problems in food technology and human nutrition
NT_P6S_UK14	Use a foreign language at B2 + level of the European Training Description System and to a higher degree use a specific terminology
NT_P6S_UW02	Apply appropriate physical, chemical, biological and sensory techniques using laboratory equipment and control-measuring devices used in food analysis, and develop and interpret the collected results
NT_P6S_UW03	Interpret physicochemical and biological phenomena occurring during the processing and storage of food raw materials and products
NT_P6S_WG01	At an advanced level facts and concepts in chemistry, biochemistry, microbiology, mathematics, physics adapted to the food technology and human nutrition
NT_P6S_WG03	At an advanced level, problems related to the properties of raw materials and products of plant and animal origin
NT_P6S_WG07	Techniques, methods and tools, unit operations and technologies used in food processing
NT_P6S_WG12	Basic techniques of food analysis (physicochemical, microbiological, toxicological, sensory) and principles of food standardization