



Food Analysis  
Educational subject description sheet

**Basic information**

<b>Field of study</b> Food technology and human nutrition		<b>Education cycle</b> 2023/24	
<b>Speciality</b> -		<b>Subject code</b> ND000000NTZS.I4BO.0723.23	
<b>Organizational unit</b> The Faculty of Biotechnology and Food Science		<b>Lecture languages</b> english	
<b>Study level</b> First-cycle (engineer) programme		<b>Mandatory</b> optional	
<b>Study form</b> Full-time		<b>Block</b> major subjects (conducted) in foreign languages	
<b>Education profile</b> General academic		<b>Disciplines</b> Food technology and nutrition	
		<b>Subject related to scientific research</b> Yes	
		<b>Subject shaping practical skills</b> Nie	
<b>Teacher responsible for the subject</b>	Agnieszka Tajner-Czopek		
<b>Other teachers conducting classes</b>	Joanna Miedzianka		
<b>Period</b> Semester 3	<b>Examination</b> exam	<b>Number of ECTS points</b> 4.0	
	<b>Activities and hours</b> lecture: 15 laboratory classes: 30		

## Goals

C1	The aim of the course is to familiarize students with the basis of food analysis. The lectures cover issues on the basics of sensory analysis and organoleptic evaluation of raw materials and food products of plant origin, food quality, standardization and methods of determining selected components of chemical components (i.e.: starch, pectin, ash, water), as well as compounds toxic to the human body, i.e. acrylamide. In laboratory exercises, students have the opportunity to carry out quality assessment of selected raw materials and food products of plant origin (i.e. milk, potatoes, sauerkraut, tomato puree tomato puree, chips), with the determination of their physicochemical characteristics, using appropriate methods.
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## Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	an advanced knowledge of the concepts of chemistry, biochemistry, microbiology, mathematics, physics, and statistics and computer science at a level that allows to describe and interpret phenomena in the field of Food technology and human nutrition related to raw materials and products of plant origin	NT_P6S_WG01	written exam, observation of student's work, practical training report
W2	an advanced knowledge of food analysis methods, including the determination of ingredients in raw materials vegetable origin (i.e., potatoes) and ready products, as well as sensory evaluation of food (e.g. chips). As well as techniques for analyzing physicochemical, microbiological, toxicological and principles of food standardization	NT_P6S_WG07	written exam, observation of student's work, practical training report
<b>Skills - Student can:</b>			
U1	prepare reports, reports and other studies on issues in the field of Food technology and human nutrition related to raw materials and products of plant origin, present them and justify their position; as well as communicate using specialized terminology	NT_P6S_UK09	active participation, performing tasks, practical training report
U2	use appropriate physical, chemical methods, biological and sensory, using equipment laboratory and control and measuring apparatus used in food analysis of raw materials and products of plant origin, as well as is able to develop and interpret the obtained results	NT_P6S_UW02	active participation, performing tasks, practical training report
<b>Social competences - Student is ready to:</b>			
K1	critically evaluate his knowledge and skills in food analysis, is also aware of the progress and changes taking place in the discipline of food technology and nutrition human	NT_P6S_KK01	active participation, performing tasks, practical training report

## Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	30

lesson preparation	30	
report preparation	25	
<b>Student workload</b>	<b>Hours</b> 100	<b>ECTS</b> 4.0
<b>Workload involving teacher</b>	<b>Hours</b> 45	<b>ECTS</b> 1.7
<b>Practical workload</b>	<b>Hours</b> 55	<b>ECTS</b> 2.0

\* hour means 45 minutes

## Study content

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

## Course advanced

### Teaching methods:

teamwork, lecture, classes

<b>Activities</b>	<b>Examination methods</b>	<b>Percentage in subject assessment</b>
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. Otles 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, International Journal of Food Science and Technology

## Kierunkowe efekty uczenia się

Kod	Treść
NT_P6S_KK01	The graduate is ready to critically evaluate his/her knowledge and skills, is aware of the progress and changes occurring in food technology and human nutrition
NT_P6S_UK09	The graduate is able to prepare reports, reports and other studies on issues of food technology and human nutrition, present them and justify his/her position; communicate using specialized terminology
NT_P6S_UW02	The graduate is able to apply appropriate physical, chemical, biological and sensory techniques using laboratory equipment and control and measuring apparatus used in food analysis, as well as develop and interpret the obtained results
NT_P6S_WG01	The graduate knows and understands at an advanced level facts and concepts of chemistry, biochemistry, microbiology, mathematics, physics, and statistics and computer science at a level that allows him/her to describe and interpret phenomena in the field of food technology and human nutrition
NT_P6S_WG07	The graduate knows and understands at an advanced level the techniques of food analysis (physicochemical, microbiological, toxicological, sensory) and the principles of food standardization