

**SUBJECT CARD (SYLLABUS)**  
**Description of the subject**

Subject code		Subject	Chemia żywności		
BiJPŻ/P/I/ST/23			Food chemistry		
Lecture language		Polish			
Academic year		2023/2024			
Field of study		Safety and quality of food production			
Within the scope of		---			
Level of the studies		first cycle			
Profile of the studies		practical			
Form of the studies		full-time			
Semester / semesters		V			
Membership of the group of classes		B1 Group of directional classes - obligatory			
Status of the subject		Compulsory			
Forms of realization of didactic classes, assessment, ECTS points		Form of the classes	Number of didactic hours	Number of ECTS points	
		Lecture	30 [h]	4,5 ECTS	
		Practical classes	15 [h]		
		...	...		
Connection of the subject	with the profile of the studies	Shapes the practical skills			2,5 ECTS
	with the entitlements	Its purpose is to acquire engineering competences by the student			2,0 ECTS
	with discipline	Chemical engineering Food and nutrition technology Management and quality sciences			1,0 ECTS 2,5 ECTS 1,0 ECTS
Form of teaching		Traditional - classes organized at the University or classes carried out with the use of distance learning methods and techniques			
Preliminary requirements		All students of the Safety and Quality of Food Production.			
University		Faculty of Chemical Engineering and Commodity Science, Department of Management and Product Quality			
Coordinator					
Website		<a href="http://www.wicit.uniwersytetradom.pl">www.wicit.uniwersytetradom.pl</a>			
E-mail address, coordinator's phone number					

**RESULTS OF STUDYING, PROGRAMME CONTENT, CONDUCT OF DIDACTIC CLASSES, VERIFICATION OF THE RESULTS OF STUDYING**

Education aim:	The aim of the course is to familiarize students with the basic issues of food chemistry, including the properties and transformations of food ingredients.
Programme content:	Lecture: <ol style="list-style-type: none"> <li>1. The scope and importance of food chemistry. Structure and chemical composition of food. (2h, W1)</li> <li>2. Physicochemical properties of water. Forms of water found in food. (2h, W1)</li> <li>3. The concept of water activity. Water activity and food stability. (2h, W1)</li> </ol>

	<ol style="list-style-type: none"> <li>Amino acids, peptides and proteins - functional properties, transformations, chemical and enzymatic modifications. (4h, W1)</li> <li>Lipids and their derivatives - classification of lipids, characteristics of fatty acids, higher fatty alcohols, chemical reactions of fatty acids and acylglycerols. (4h, W1)</li> <li>Saccharides in food. (4h, W1)</li> <li>Minerals and vitamins. (2h, W1)</li> <li>Food additives. (2h, W1)</li> <li>Food dyes - chemical structure, sources and stability of food dyes. (2h, W1)</li> <li>Fragrances. (1h, W1)</li> <li>Mutagenic, carcinogenic and anti-carcinogenic food ingredients (1h, W1)</li> <li>Interactions of food ingredients. (2h, W1)</li> <li>Effect of storage and processing conditions on food ingredients. (2h, W1)</li> </ol> <p>Practical classes (UP):</p> <ol style="list-style-type: none"> <li>Principles of sampling and preparation of samples for laboratory testing (2h, U1, K1)</li> <li>Calculations concerning the daily demand for energy and basic ingredients. (2h, U1, K1)</li> <li>Calculations of the content of individual basic food components in the diet and its energy value. (2h, U1, K1)</li> <li>Calculations regarding the nutritional value of specific groups of food products and covering the demand for: a/ energy, b/ protein, c/ fat d /carbohydrates – discussion with students. (2h, U1, K1)</li> <li>Analysis of the fatty acid composition of selected fats and oils on the basis of chromatograms obtained by GC determination (2h, U1, K1)</li> <li>Calculations of the concentration of food ingredients (4h, U1, K1)</li> <li>Test (1h)</li> </ol>
Didactic (education) methods:	<ul style="list-style-type: none"> <li>– informative lecture</li> <li>– seminar lecture</li> <li>– didactic discussion</li> <li>– practical methods (demonstration, exercises, multimedia presentations)</li> </ul>
Pass discipline, evaluation criteria of the achieved learning results, calculation method of the final mark:	The condition for completing the course is achieving all the required learning outcomes specified for the course. Obtaining positive grades from all forms of classes included in a given course is tantamount to completing it and obtaining by the student the number of ECTS points assigned to this course. The method of calculating the final grade for the course is specified in the study regulations.

Results of learning a given subject in respect of direction effect and the form of the classes				Methods of verification of the results of learning	
Number of the result of learning	Description of the results of learning for a given subject Student, who passed a given subject knows and understands/ is able to/ is ready to:	Direction effect of learning	Form of classes	Form of verification (passes)	Methods of verification and assessment
W1	Student knows the changes and phenomena occurring in food during its processing, storage and protection, taking into account the requirements and standards of ensuring food safety and quality. Student knows the properties, composition of plant and animal raw materials, auxiliary substances, final food products. Student knows the risks and threats to food safety, how to identify and prevent them.	K_WG02 K_WG04	lecture	Written test / oral answer	written exam
U1	Student is able to obtain and interpret information from the literature, databases and other sources in the field of food chemistry in order to effectively manage the safety and quality of food products also using terminology in a foreign language, working in a group and creating consistent statements at the B2 level	K_UW02 K_UK05 K_UK06 K_UK07	practical classes	Written test / oral answer	written test, exercise reports

K1	Student understands the recognition of the importance and critical analysis of knowledge and the received content (obtained results) in solving practical problems.	K_KK01	practical classes	Written test / oral answer	written test, exercise reports
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#### Literature and scientific support

##### Basic literature:

Praca zbiorowa (pod red. Sikorski, Z., Staroszczyk, H.), 2017: Chemia żywności Tom 1 – Główne składniki żywności. WNT, Warszawa.

Praca zbiorowa (pod red. Sikorski, Z., Staroszczyk, H.), 2017: Chemia żywności Tom 2 – Biologiczne właściwości składników żywności. WNT, Warszawa.

Pijanowski E., Dłużewski M., Dłużewska A., Jarczyk A., 2009: Ogólna technologii Żywności. WNT, Wyd. 8, Warszawa.

Kołożyn - Krajewska D., Sikora T., 2010: Zarządzanie bezpieczeństwem żywności. Teoria i praktyka, Wyd. C.H.Beck, Warszawa

Praca zbiorowa (pod red. A. Jarczyk, E. Dłużewska), 2008: Wybrane zagadnienia z ogólnej technologii żywności. Wyd. SGGW Warszawa;

Dłużewska E., Leszczyński K. (red.), 2013 r., "Ogólna technologia żywności", wyd. SGGW Warszawa

Bednarski W. (red.), 1996 r., "Ogólna technologia żywności", cz. 1 i 2, wyd. ART Olsztyn.

##### Supplementary literature:

Rutkowski A., Gwiazda S., Dąbrowski K., 2003, Kompendium dodatków do żywności. Hortimex, Konin.

Praca zbiorowa (red. Z. Żakowski, H. Stobińska), 2000, Mikrobiologia i higiena w przemyśle spożywczym. Wyd. PŁ, Łódź.

Praca zbiorowa (pod red. F. Świderski), 1999, Żywność wygodna i żywność funkcjonalna. WNT, Warszawa.

Czasopisma branżowe: Postępy Techniki Przetwórstwa Spożywczego, Przegląd Mleczarski, Przegląd Piekarski i Cukierniczy, Przegląd Zbożowo-Młynarski, Przemysł Fermentacyjny i Owocowo-Warzywny, Przemysł Spożywczy, Żywność Nauka Technologia Jakość, Polish Journal of Food and Nutrition Sciences.

McClements, David Julian. *Food emulsions: principles, practices, and techniques*. CRC press, 2015.

Journals: Food Chemistry. LWT -Food Science and Technology,

#### Amount of student's labour necessary to achieve the assumed effects of learning – ECTS points balance

Participation in the classes, activity	Student's burden [h]		
	Other contact hours	Classes without teachers - student's own work	Didactic classes
Participation in lectures	X	X	30 [h]
Participation in practical classes	X	X	15 [h]
Participation in consultations	17 [h]	X	X
Preparation for the classes Preparation for the pass	X	50,5 [h]	X
Summary student's workload	17 [h]/ 0,68 ECTS	50,5[h]/2,02 ECTS	45[h]/ 1,8 ECTS
ECTS points for a subject	4,5 ECTS		

#### Additional information, notes

W przypadku studentów ze szczególnymi potrzebami, w tym: z niepełnosprawnością, przewlekłe chorych, określone powyżej (w karcie) metody i formy weryfikacji efektów uczenia się dostosowuje się odpowiednio do indywidualnych potrzeb tych studentów. Szczegółowe zasady i formy wsparcia studentów ze szczególnymi potrzebami: w tym z niepełnosprawnością, przewlekłe chorych podczas zajęć, zaliczeń i egzaminów określono w: Regulaminie Studiów, Zasadach Studiowania, Procedurze dotyczącej zapewnienia dostępności procesu kształcenia studentom ze szczególnymi potrzebami, w tym: z niepełnosprawnością, przewlekłe chorych.