



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Biochemistry Educational subject description sheet

### Basic information

<b>Field of study</b> Food technology and culinary arts		<b>Education cycle</b> 2021/22	
<b>Speciality</b> -		<b>Subject code</b> WBiNoZNTGS.I2B.3018.21	
<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	
<b>Education profile</b> Practical		<b>Disciplines</b> Biological sciences	
		<b>Subject related to scientific research</b> No	
		<b>Subject shaping practical skills</b> Nie	
<b>Teacher responsible for the subject</b>	Aneta Skaradzińska		
<b>Other teachers conducting classes</b>	Aneta Skaradzińska		
<b>Period</b> Semester 2	<b>Examination</b> exam	<b>Number of ECTS points</b> 7.0	
	<b>Activities and hours</b> lecture: 30 laboratory classes: 45		

## Goals

C1	The aim of the subject is for students to get knowledge about the structure and function of cellular molecules: amino acids, proteins, saccharides, lipids, fatty acids, nucleic acids. The program of lectures also includes issues concerning the mechanism and kinetics of enzymatic action, characteristics of coenzymes and vitamins soluble in water and fat, and also the course of catabolic and anabolic processes and the location and the regulation of metabolism in the cell. The aim of the subject is also for students to get knowledge about the most important chemical compounds found in food and their impact on human body.
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## Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	The student has a basic knowledge regarding the structure and function of cellular macromolecules and he knows how to explain the integration and hierarchy of cellular processes. He knows the main metabolic pathways: sugars, proteins, nucleic acids, lipids, overlapping with the relevant enzymes	TOG_P6S_WG01	written exam, test
W2	The student knows biologically active compounds found in food and also understands biochemical processes occurring during food processing	TOG_P6S_WG02	written exam, test
<b>Skills - Student can:</b>			
U1	The student can perform biochemical reactions using necessary equipment in the biochemical laboratory	TOG_P6S_UW05	active participation, test, performing tasks
U2	The student performs reactions characteristic for cellular organic compounds and selects conditions for enzymatic reaction	TOG_P6S_UW05	active participation, test, performing tasks
U3	The student calculates the concentration of sugars, proteins, nucleic acids, knows what is a standard curve	TOG_P6S_UW05	active participation, test, performing tasks
U4	The student is capable of working independently and in a team and is aware of the shared responsibility of performed tasks	TOG_P6S_UO13	active participation, test, performing tasks
<b>Social competences - Student is ready to:</b>			
K1	The student is aware of the possibilities of using biochemistry to solve various problems in the field of food technology	TOG_P6S_KK02	observation of student's work
K2	The student cares for the workplace, glassware and equipment	TOG_P6S_KO03	observation of student's work

## Balance of ECTS points

Activity form	Activity hours*
lecture	30
laboratory classes	45

class preparation	50	
exam / credit preparation	80	
consultations	2	
exam participation	2	
<b>Student workload</b>	<b>Hours</b> 209	<b>ECTS</b> 7.0
<b>Workload involving teacher</b>	<b>Hours</b> 79	<b>ECTS</b> 3.0
<b>Practical workload</b>	<b>Hours</b> 45	<b>ECTS</b> 1.7

\* hour means 45 minutes

## Study content

No.	Course content	Activities
1.	The structure and function of cellular molecules: amino acids, proteins, saccharides, lipids, fatty acids, nucleic acids; features, the mechanism and kinetics of enzymatic action; coenzymes and vitamins soluble in water and fat; catabolic and anabolic processes; the course, the location and the regulation of metabolism in the cell. The most important compounds found in food and their impact on human body.	lecture
2.	Titles of classes: <ol style="list-style-type: none"> <li>1. The introduction, accounting exercises.</li> <li>2. The properties of aminoacids and proteins.</li> <li>3. Quantative determination of protein concentration. Lowry's method.</li> <li>4. The properties of enzymes. Urease.</li> <li>5. Determination of <math>\alpha</math>-amylase activity.</li> <li>6. The aspartate aminotransferase.</li> <li>7. The nucleic acids..</li> <li>8. Determination of reducing saccharides. Nelson's method. Passing the course.</li> </ol>	laboratory classes

## Course advanced

### Teaching methods:

teamwork, discussion, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	50%
laboratory classes	observation of student's work, active participation, test, performing tasks	50%

## Literature

### Obligatory

1. Biochemia, Berg J.M., Tymoczko J.L., Stryer L, PWN, 2007

### Optional

1. Biochemia Harpera, Murray R.K. i inni, PZWL Warszawa, 2006

## Kierunkowe efekty uczenia się

Kod	Treść
TOG_P6S_KK02	Absolwent jest gotów do wykorzystania wiedzy z zakresu nauk o żywności i technologii gastronomii w rozwiązywaniu problemów zawodowych
TOG_P6S_KO03	Absolwent jest gotów do podejmowania odpowiedzialności za wysoką jakość i bezpieczeństwo produktów żywnościowych
TOG_P6S_UO13	Absolwent potrafi planować i organizować pracę indywidualną oraz w zespole, przyjmując w nim różne role,
TOG_P6S_UW05	Absolwent potrafi wykonać analizy z wykorzystaniem metod oraz technik chemicznych, biologicznych i fizycznych w zakresie technologii żywności i żywienia człowieka posługując się odpowiednią aparaturą
TOG_P6S_WG01	Absolwent zna i rozumie w stopniu zaawansowanym zagadnienia z chemii i matematyki oraz fakty, pojęcia i zależności między wybranymi zjawiskami przyrodniczymi charakterystyczne dla kierunku technologia i organizacja gastronomii
TOG_P6S_WG02	Absolwent zna i rozumie w zaawansowanym stopniu teorie wyjaśniające zjawiska i procesy zachodzące podczas pozyskiwania i przetwarzania różnych rodzajów żywności oraz praktyczne zastosowanie tej wiedzy w działalności zawodowej