



# 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> 2023/24	
<b>Speciality</b> -		<b>Subject code</b> ND000000NTGS.I2B.3018.23	
<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	
<b>Education profile</b> Practical		<b>Disciplines</b> Biological sciences	
		<b>Subject related to scientific research</b> Yes	
		<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> 5.0	
	<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 understands the integration and hierarchy of cellular processes. He knows and understands 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_WG01	written exam, test
<b>Skills - Student can:</b>			
U1	The student can perform biochemical reactions using necessary equipment in the biochemical laboratory	TOG_P6S_UW04	observation of student's work, active participation, test, performing tasks
U2	The student can perform reactions characteristic for cellular organic compounds and selects conditions for enzymatic reaction	TOG_P6S_UW04	observation of student's work, active participation, test, performing tasks
U3	The can calculate the concentration of sugars, proteins, nucleic acids, knows what is a standard curve	TOG_P6S_UW04	observation of student's work, 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_UO12	observation of student's work, active participation, test, performing tasks
U5	The student is capable of using professional terminology in a foreign language	TOG_P6S_UK11	observation of student's work, active participation
<b>Social competences - Student is ready to:</b>			
K1	The student is prepared to use the possibilities of using biochemistry to solve various problems in the field of food technology	TOG_P6S_KK01	observation of student's work
K2	The student cares for the workplace, glassware and equipment	TOG_P6S_KO02	observation of student's work

## Balance of ECTS points

Activity form	Activity hours*	
lecture	30	
laboratory classes	45	
class preparation	30	
exam / credit preparation	40	
consultations	1	
exam participation	2	
<b>Student workload</b>	<b>Hours</b> 148	<b>ECTS</b> 5.0
<b>Workload involving teacher</b>	<b>Hours</b> 78	<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

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

## **Entry requirements**

organic chemistry

## **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_KK01	The graduate is ready to critically evaluate his knowledge and skills in terms of the functioning of existing systems in the technology and organization of gastronomy, and to consult experts in solving professional problems
TOG_P6S_KO02	The graduate is ready to take responsibility for high quality and safety of food products
TOG_P6S_UK11	The graduate is able to use a foreign language at the B2 level of the Common European Framework of Reference for Languages
TOG_P6S_UO12	The graduate is able to plan and organize individual and team work, taking on different roles in it
TOG_P6S_UW04	The graduate is able to perform analyses using chemical, microbiological and physical methods and techniques in the field of food production, using appropriate apparatus
TOG_P6S_WG01	The graduate knows and understands, to an advanced degree, the issues of chemistry and mathematics, as well as facts, concepts and relationships between selected natural phenomena specific to the field of gastronomy technology and organisation