



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Biochemistry Educational subject description sheet

Basic information

Field of study Food technology and culinary arts		Education cycle 2022/23	
Speciality -		Subject code ND000000NTGS.I2B.3018.22	
Organizational unit 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	
Education profile Practical		Disciplines Biological sciences	
		Subject related to scientific research No	
		Subject shaping practical skills Nie	
Teacher responsible for the subject	Aneta Skaradzińska		
Other teachers conducting classes	Aneta Skaradzińska		
Period Semester 2	Examination exam	Number of ECTS points 5.0	
	Activities and hours 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
Knowledge - Student knows and understands:			
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
Skills - Student can:			
U1	The student can perform biochemical reactions using necessary equipment in the biochemical laboratory	TOG_P6S_UW05	observation of student's work, active participation, test, performing tasks
U2	The student performs reactions characteristic for cellular organic compounds and selects conditions for enzymatic reaction	TOG_P6S_UW05	observation of student's work, 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	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_UO13	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_UK12	observation of student's work, active participation
Social competences - Student is ready to:			
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	30	
exam / credit preparation	40	
consultations	1	
exam participation	2	
Student workload	Hours 148	ECTS 5.0
Workload involving teacher	Hours 78	ECTS 3.0
Practical workload	Hours 45	ECTS 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"> 1. The introduction, accounting exercises. 2. The properties of aminoacids and proteins. 3. Quantative determination of protein concentration. Lowry's method. 4. The properties of enzymes. Urease. 5. Determination of α-amylase activity. 6. The aspartate aminotransferase. 7. The nucleic acids.. 8. Determination of reducing saccharides. Nelson's method. Passing the course. 	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	The graduate is ready to apply knowledge of food science and catering technology in solving professional problems
TOG_P6S_KO03	The graduate is ready to take responsibility for high quality and safety of food products
TOG_P6S_UK12	The graduate can use a foreign language at B2 level of the Common European Framework of Reference for Languages
TOG_P6S_UO13	The graduate can plan and organise their work individually and as part of a team, taking up different roles
TOG_P6S_UW05	The graduate can perform analyses using chemical, biological and physical methods and techniques within the scope of food technology and human nutrition, using appropriate equipment
TOG_P6S_WG01	The graduate knows and understands to an advanced degree the issues of chemistry and mathematics as well as the facts and relationships between selected natural phenomena relevant to the field of study catering technology and organization
TOG_P6S_WG02	The graduate knows and understands in an advanced level, theories explaining phenomena and processes occurring during obtaining and processing of different kinds of food and the practical application of this knowledge in professional activity