

Subject card

Subject name and code	Biochemistry, PG_00037494							
Field of study	Biotechnology							
Date of commencement of studies	October 2020	Academic year of realisation of subject		2022/2023				
Education level	first-cycle studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study			
Mode of study	Full-time studies		Mode of delivery		at the university			
Year of study	3	Language of instruction		Polish				
Semester of study	6	ECTS credits		4.0				
Learning profile	general academic profile		Assessment form		assessment			
Conducting unit	Department of Pharmaceutical Technology and Biochemistry -> Faculty of Chemistry							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Ewa Augustin					
	Teachers		dr hab. Ewa Augustin dr inż. Agnieszka Potęga dr inż. Paweł Filipkowski dr inż. Izabela Koss-Mikołajczyk Michał Kosno Aleksandra Kuplińska dr inż. Andrzej Skwarecki dr inż. Kamila Rząd					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM	
	Number of study hours	0.0	0.0	60.0	0.0	15.0	75	
	E-learning hours included: 0.0 Additional information: Laboratory: Students perform biochemical experiments, which were prepared earlier by the teacher. Seminar: Students prepare individual scientific video-presentations related to the current subjects of biochemical field proposed by the teacher and developed by the student.							
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM	
	Number of study hours	75		5.0		20.0	100	
Subject objectives	1. seminarium; to extend the general biochemical knowledge considering the current intensive research in this field 2. laboratory: to extend the general biochemical knowledge and to learn the basic experimental techniques together with the formulation of conclusions on the basis of experimental results.							

Learning outcomes	Course outcome	Subject outcome	Method of verification															
	K6_W05	Kept the background and the extended knowledge in the field of the physiology of the living organisms considering particularly molecular structure and pharmacological properties of biologically active compounds																
	K6_U05	Know, how to perform biochemical experiments in the field of enzymatic kinetics and of the analysis of physiologically important proteins and nucleic acids																
	K6_W06	Kept the background and the extended knowledge in the field of the physiology of the living organisms.																
Subject contents	<p>Seminars</p> <p>1. Microorganisms; current ideas in antibacterial drug resistance. The human microbion - bacterias as our friends. New patogens: fungi, fungal diseases for mammals.</p> <p>2. Immunological system: for protecting against immunological dissesases, how to predict their progression? the role of heat shock proteins in our health.</p> <p>3. Senescence: the reason of earlier death or the defence against tumor development, the function of mTOR protein.</p> <p>4. our current tasks in therapy of HIV: vaccines, DNA therapy, genetic resistance to HIV.</p> <p>5. New attitiude to antioxidants and vitamins. are there free radicals toxic? for what there are in nature? What is the unknown role of vitamin D?</p> <p>6. Our nervous system: how to keep the continuous skillness? can we improve the brain skillness with pharmaceuticals? what is the mechanism of Parkinson and Alzheimer diseases? Can we protect against or be before the serious symptoms? Is it possible to come back with merihuana as a therapeutic agent?</p> <p>Laboratory:</p> <p>Analytical methos of separation and identyfication of aminoacids. Methods of protein concentration analysis. The application of calorimetric methods in biochemistry. Physicochemical properties of proteins. SDZ PAGE separation of proteins. Kinetic parameters of enzymatic reactions. The cleaning of yeast inverase. The isolation of lipids from nutmeg. Structural analysis of glicogene. Chrophile analysis by thin layer chromatography. Determination of vitamin C in the food</p>																	
Prerequisites and co-requisites	The background in cell biology and biophysics, organic chemistry, inorganic chemistry and analytical chemistry.																	
Assessment methods and criteria	<table border="1"> <thead> <tr> <th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr> </thead> <tbody> <tr> <td>the preparation to laboratory experiments.</td><td>50.0%</td><td>10.0%</td></tr> <tr> <td>individual preparation of the presentation</td><td>60.0%</td><td>40.0%</td></tr> <tr> <td>the participation in the laboratory and seminars,</td><td>10.0%</td><td>10.0%</td></tr> <tr> <td>the preparation the experiment raport.</td><td>60.0%</td><td>40.0%</td></tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	the preparation to laboratory experiments.	50.0%	10.0%	individual preparation of the presentation	60.0%	40.0%	the participation in the laboratory and seminars,	10.0%	10.0%	the preparation the experiment raport.	60.0%	40.0%
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Recommended reading	Basic literature	Seminarium: Scientific American current editions and the proposed by teacher articles. Laboratory: Biochemistry. Laboratory exercises. Script edited by S.Milewski. and the individual instructions for the selected laboratory.
	Supplementary literature	Students collect the literature data themselves
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	<p>Seminarium</p> <p>1. The recent discoveries related to the bacteria resistance against antibiotics.</p> <p>2. The function of immunological system in warning against illness. Compare with the role chaperone proteins.</p> <p>3. Senescence: the cause of the organism aging or is it the defence against cancerogenesis? The role of mTOR proteins.</p> <p>4. The current knowledge in the field of anty-HIV therapy: vaccine, DNA therapy, innate immunity.</p> <p>5. The new theories related to antyoxidants and vitamines. What is the role of free radical? they are really harmful?</p> <p>6. The human nervous system: how to keep its good efficiency, what would be the role of therapeutics in the increasing of brain conditions?</p> <p>Laboratory</p> <p>1. Which method would you apply for the aminoacids separation and identification?</p> <p>2. Give the examples of the calorymetric methods applications</p> <p>3. Describe the SDS PAGE procedure for the proteins separations</p> <p>4. Characterize the parameters for the description of enzymation transformations.</p> <p>5. What is the procedure for the analysis of chlorophyll in the for example oak leave?</p>	
Work placement	Not applicable	