

Course code:

Plan position:

A. INFORMATION ABOUT THE COURSE

B. Basic information

Name of course	Biochemistry and Enzymology
Field of studies	
Level of studies	
Profile of studies	
Form of studies	
Specialty	
Unit responsible for the field of studies	
Name and academic degree of teacher(s)	dr hab. inż. A. Siwik-Ziomek, prof.PBS
Introductory courses	
Introductory requirements	

C. Semester/week schedule of classes

Semester	Lectures (W)	Auditorium classes (Ć)	Laboratory classes (L)	Project classes (P)	Seminar (S)	Field classes (T)	Number of ECTS points
III/IV			35				7

2. LEARNING OUTCOME

No.	Learning outcomes description	The reference to the learning outcomes of specific field of study	The reference to the learning outcomes for the area
KNOWLEDGE			
W1	He knows the chemical and biological phenomena occurring in nature. He knows the laws and quantities of chemical processes occurring in nature. He understands the relationships and dependencies between various disciplines of natural sciences, in particular the relationship between animate and inanimate nature.	P6S_WG	P6S_WG
W2	Characterizes the basic analytical methods used in biochemical research.	P6S_WG	P6S_WG
SKILLS			
U1	Applies basic measurement and analytical techniques used in biochemical analysis laboratories, interprets observations, measurements and draws correct conclusions based on them.	K_U04	P6S_UW

U2	He can conduct research, interpret the results and draw conclusions based on theoretical knowledge. Works individually and in a team, and manages time. Is aware of the responsibility for jointly performed tasks related to teamwork.	K_U12	P6S_UW P6S_UO
SOCIAL COMPETENCES			
K1	Respects the intellectual property of creators, independently or collectively prepares reports and reports on the work carried out and presents them in a way that is understandable to the recipients. He sees the need to educate various social groups in the field of environmental protection.	K_K02	P6S_KR

3. TEACHING METHODS

A. Traditional methods used ***

laboratory exercises, multimedia lecture

B. Distance learning methods used ***

Synchronous method (classes conducted in a way that ensures direct interaction between the student and the teacher in real time, enabling immediate flow of information, the method can be used only if it is provided for in the study plan for a given cycle of education):
e.g. remote lecture in the form of videoconference, remote discussion, etc.

Asynchronous method used as an auxiliary (a method that does not ensure direct interaction between the student and the teacher in real time, used only as an auxiliary / complementary method):

e.g. online educational videos, online multimedia presentations, etc.

4. METHODS OF EXAMINATION

Laboratory exercises

form of credit: practical performance of laboratory exercises and preparation of a report on exercises performed in a team (W1, W2, U1, U2, K1)

pass conditions:

W1, W2 - obtaining at least 51% of points confirming the achievement of each of the learning outcomes listed in point 2

U1, U2 - obtaining at least 51% of points confirming the achievement of each of the learning outcomes listed in point 2.,

K1 - obtaining at least 51% of points confirming the achievement of each of the learning outcomes listed in point 2

pass conditions: test - open and closed questions (W1, W2, U1, K1).

5. SCOPE

Laboratories	Aminoacids and proteins: Chromatography of amino acids, Reactions specific to individual amino acids, Quantitative determination of protein using the biuret method, Electrophoretic Separation of Amino Acids, Dialysis, Amphoteric properties of protein, Protein precipitation with concentrated salt solutions - salting out. Carbohydrates: Identification of sugars using paper chromatography, The detection of ketose – Seliwanow reaction, Barfoed test – distinction reducing monosaccharides from disaccharides, Bial test (for pentoses), Iodine test, Acid starch hydrolysis. Lipids: Identification of lipids using thin-layer chromatography,
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	Determination of acid values in different fat samples, Glycerol determination (Wagenaar reaction), Detection of cholesterol. Enzymes activity: Determination of catalase activity according to J.L. Johnson and K.L. Temple, Determination of protease and lipase activity, The influence of different factors on urease activity, Determination of amylases activity extracted from barley grain, Determination of acid phosphatase activity in plant germs.
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6. METHODS OF VERIFICATION OF LEARNING OUTCOMES

LEARNING OUTCOME	Form of assessment					
	Presentation	Test	Report of lab work	Project	Oral examination	Colloquium
W1		x				
W2			x			
U1	x					
U2		x				
K1		x				

7. LITERATURE

Basic literature	Voet Donald: Biochemistry. New York : John Wiley & Sons, 1995 Heldt Hans-Walter: Plant biochemistry. Amsterdam : Elsevier Academic Press, 2005
Supplementary literature	Soil Biology & Biochemistry. Oxford : Pergamon Press, 1969 Paul Eldor Alvin: Soil microbiology and biochemistry. San Diego : Academic Press, 1989

8. TOTAL STUDENT WORKLOAD REQUIRED TO ACHIEVE EXPECTED LEARNING OUTCOMES EXPRESSED IN TIME AND ECTS CREDITS

Student's activity		Student workload– number of hours
Classes conducted under a direct supervision of an academic teacher or other persons responsible for classes	Participation in classes indicated in point 1B	75
	Supervision hours	5
Student's own work	Preparation for classes	30
	Reading assignments	25
	Other (preparation for exams, tests, carrying out a project etc)	40
Total student workload		175
Number of ECTS points		7