University of Gdańsk

Subject card

Subject name and code	Biochemistry, PG_00188305						
Field of study	Biochemia (Ćw.laboratoryjne)						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2027/2028			
Education level	Bachelor's 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	2		Language of instruction	Polish			
Semester of study	3		ECTS credits	2.0			
Learning profile	academic		Assessment form	credit			
Conducting unit	Laboratory of Bioorganic Chemistry -> Department of Molecular Biochemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Krzysztof Rolka				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	E-learning hours included: 0.0						
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	30		5.0	15.0	50	
Subject objectives	To teach students how to perform biochemical experiments using delivered instructions. To develop the ability to critically asses and interpret obtained experimental results and analysis of scientific sources.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[AKRL3_K06] The graduate is ready to follow occupational health and safety regulations in the laboratory and care for the safety of themselves and others.	The student knows the basic health and safety rules applicable in chemical and biological laboratories and is able to apply them when performing biochemical analyses. Can respond appropriately to emergency situations in the laboratory. Ensures personal and others' safety during experimental procedures.	[SK2] prezentacja/projekt/referat/ raport [SK5] realizacja zadania problemowego [SK8] obserwacja samodzielnej lub zespołowej pracy studenta
[AKRL3_W10] The graduate knows and understands the principles of safe work in chemical and biological laboratories, including procedures for handling hazardous and infectious materials.	The student designs and performs simple biochemical experiments, selecting laboratory equipment according to its intended use. Is able to apply health and safety regulations when performing biochemical analyses. Can properly handle reagents and biological materials in accordance with established procedures.	[SW4] test/egzamin - ustny lub pisemny [SW2] prezentacja/projekt/referat/ raport [SW5] realizacja zadania problemowego
[AKRL3_W07] The graduate knows and understands the principles of quality assurance in analytical and forensic laboratories.	The student knows the principles of quality assurance in a biochemical laboratory. Understands the importance of quality control and method validation in biochemical analyses. Is able to apply quality assurance procedures when performing biochemical analyses. Can assess the correctness of results in the context of quality standards. Is prepared to responsibly follow quality and safety principles in laboratory work. Demonstrates awareness of the importance of data quality for research reliability.	[SW4] test/egzamin - ustny lub pisemny [SW2] prezentacja/projekt/referat/ raport [SW5] realizacja zadania problemowego
[AKRL3_U11] The graduate is able to work effectively in a laboratory team while adhering to professional ethics and organisational rules.	Understands the need of continuous education. Appreciates the need of ability to team work according to assigned role (team leader/team member). Is aware of the need of critical analysis of own work. Is aware of the necessity of fair and reliable work.	[SU2] prezentacja/projekt/referat/ raport [SU5] realizacja zadania problemowego [SU8] obserwacja samodzielnej lub zespołowej pracy studenta

Subject contents

Performing five laboratory exercises/experiments covering the following topics: determination of the enzymatic activity of serine proteinases and their inhibitors and chromogenic substrates; application of gel filtration chromatography for protein analysis; chromatographic analysis of phospholipids; examination of polysaccharide susceptibility to hydrolysis under low pH conditions; isolation and electrophoresis of nucleic acids

Prerequisites and co-requisites

organic chemistry, basic knowledge of organic chemistry, skills work in a chemical laboratory, knowledge of

basic laboratory glassware, learning the principles work in a biochemical laboratory

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
five entrance tests, assessment of student work and positive assessment of laboratory reports	51.0%	100.0%

Recommended reading

Basic literature	Instructions for laboratory exercises prepared by the Department's employees are available in electronic form on the Faulty's website
Supplementary literature	J. M. Berg, J. L. Tymoczko, L. Stryer, Biochemia, PWN, Warszawa 2009 and subsequent editions, also other academic textbooks for biochemistry
eResources addresses	Basic https://chemia.ug.edu.pl/wydzial/katedry/katedra-biochemii-molekularnej/dydaktyka/instrukcje-laboratoryjne - The script contains all instructions for the exercises as well as a brief theoretical introduction

Example issues/ example questions/ tasks being completed	• What is the significance of polysaccharide susceptibility to hydrolysis in biological processes? • Explain the principle of gel filtration chromatography and what information about proteins can be obtained using this method. • What factors influence the separation of phospholipids in chromatographic analysis? • Describe the stages of nucleic acid isolation from biological material. • List the basic health and safety rules applicable when working with biological and chemical materials.
Work placement	Not applicable

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