University of Gdańsk

Subject card

Subject name and code	Advanced methods in molecular biology, PG_00153694		
Field of study	Biotechnology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	undergraduate studies	Subject group	
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	4	ECTS credits	2.0
Learning profile	academic	Assessment form	
Conducting unit			
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Katarzyna Węgrzyn	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	10.0	20.0	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	10.0	45

Subject objectives

he aim of the course is to familiarize students with selected advanced techniques in molecular biology. During the laboratories, various techniques used in studies of protein interactions with nucleic acids and other proteins will be discussed, including techniques based on unique technologies such as MST, SPR, BLI, and AFM. Students will independently conduct each experiment and operate specialized research equipment under the supervision of the teacher.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOTECHL3_U08] The graduate is able to learn independently in a targeted manner	Student is able to independently, under the supervision of the teacher, conduct analyses using specialized research equipment.	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[BIOTECHL3_W07] The graduate knows and understands basic techniques and research tools used in biotechnology.	Student is familiar with selected advanced techniques in molecular biology, used in studies of protein interactions with nucleic acids and other proteins.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report

Subject contents

Laboratories:

- Electrophoretic Mobility Shift Assay (EMSA)
- Bio-Layer Interferometry (BLI) / Surface Plasmon Resonance (SPR)
- Micro-Scale Thermophoresis (MST)
- Atomic Force Microscopy (AFM)

Auditoriums:

- Theoretical introduction to advanced molecular biology methods.
- Discussion of conducted analyses, obtained results. Summary of classes.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Test	50.0%	55.0%
Reports	50.0%	45.0%

Recommended reading	Basic literature	Materials prepared by the teacher.
	Supplementary literature	Selected publications (review and experimental). Handbook of Surface Plasmon Resonance Richard B. M. Schasfoort, Anna J. Tudos 2008 Introduction to Atomic Force Microscopy: Theory, Practice, Applications Paul E. West 2006 DNA-protein Interactions: A Practical Approach Andrew Arthur Travers, Malcolm Buckle - 2000
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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