University of Gdańsk

Subject card

Subject name and code	Application of selected instrumental techniques to study interactions with DNA, PG_00170601		
Field of study	Chemical Business		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2026/2027
Education level	Bachelor's studies	Subject group	Optional 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	credit
Conducting unit	Laboratory of Intermolecular Interactions -> Department of Bioinorganic Chemistry -> Faculty of Chemistry -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	mgr inż. Paulina Nowicka	
	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	10.0	15.0	55

Subject objectives

To familiarize students with modern instrumental techniques used to study the interactions of small-molecule chemical compounds with DNA. To develop practical skills in designing experiments, analyzing and interpreting the results of performed experiments. To acquire the ability to describe quantitatively and qualitatively the obtained results.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BCHINŻ_K02] Works individually demonstrating initiative and independence in actions, and effectively cooperates in a team, performing various roles in it.	Works individually showing initiative and self-reliance in activities, interacts effectively in a team performing various roles in it.	[SK8] observation of student's independent or team work
[BCHINŻ_W07] Describes the construction and operating principles of basic scientific, technological and control-measuring apparatus.	Describes the construction, principle of operation and application of selected instrumental techniques used to study interactions with DNA.	[SW3] text preparation/written work
[BCHINŻ_U03] Plans, selects the appropriate research and measuring equipment and performs simple chemical experiments; analyses the results and draws conclusions based on them.	Plans, selects appropriate equipment and research and measurement apparatus, performs physical and chemical measurements and experiments; analyzes the results and on their basis formulates conclusions.	[SU3] text preparation/written work

Subject contents

Practical application of selected instrumental techniques for studying interactions of compounds with DNA. Development and interpretation of results of instrumental measurements, including determination of quantitative parameters of interactions and qualitative interpretation. Discussion of the determined mechanisms of binding of compounds to DNA.

Prerequisites and co-requisites

<table>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Output report evaluated on points. Maximum number of points possible to obtain 10 points.</td><td>51.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">Instructions and a list of papers given by the instructor during class.</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">N/A</td></tr>
<tr><td>eResources addresses</td><td colspan="2"></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">Based on the obtained graphs of changes in fluorescence intensity over time, characterize the processes of association and dissociation of interaction.</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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