University of Gdańsk

Subject card

Subject name and code	Advanced analitical methods, PG_00153696		
Field of study	Biotechnology		
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 Optional subject group 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	4	ECTS credits	2.0
Learning profile	academic	Assessment form	credit
Conducting unit	Zespół Laboratoriów Specjalistycznych MWB UG i GUMed -> Intercollegiate Faculty of Biotechnology UG-MUG -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Katarzyna Macur	
	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	15.0	50

Subject objectives

The aim of the course is to familiarize students with selected advanced analytical techniques. During the course, various chromatographic techniques used in the study of biologically active compounds (small molecule organic compounds (secondary metabolites), peptides and proteins will be discussed, including techniques based on unique technologies, e.g. high performance liquid chromatography and mass spectrometry detection. During the classes, students will independently conduct each of the experiments and operate specialized research equipment under the supervision of the instructor.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOTECHL3_U08] The graduate is able to learn independently and in a targeted manner, develop his or her competences and plan their improvement.	The student learns to independently conduct each of the experiments and, under the supervision of the instructor, to operate specialized research equipment.	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[BIOTECHL3_W07] The graduate has advanced knowledge of the rules of operation and the possibilities of using research techniques and tools used in biotechnology.	The student has knowledge of selected advanced analytical techniques used in biotechnology, in the study of biologically active compounds (small molecule organic compouinds (secondary metabolites), peptides and proteins). In particular, this applies to chromatographic techniques, including high-performance liquid chromatography and mass spectrometry detection.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report

<table>
<tr><td>Subject contents</td><td>1. Preparation of samples for analysis.

2. Chromatography

3. High Performance Liquid Chromatography (HPLC).

4. Mass spectrometry (MS)5. Liquid chromatography-mass spectrometry (LC-MS).</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Reports from the laboratory classes</td><td>51.0%</td><td>30.0%</td></tr>
<tr><td>Final test</td><td>51.0%</td><td>70.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>1. Przygotowanie próbek do analizy / Agata Kot-Wasik, Anna Jakimska, Andrzej Wasik. Wydawnictwo Politechniki Gdańskiej 2012 | Gdańsk : Wydawnictwo Politechniki Gdańskiej SR.26.3.0

2. Techniki separacyjne / Piotr Stepnowski [et al.]. | Europejski Fundusz Społeczny | Wydawnictwo Uniwersytetu Gdańskiego 2010 | Gdańsk : Wydawnictwo Uniwersytetu Gdańskiego CH.21.9.5.3</td></tr>
<tr><td>Supplementary literature</td><td></td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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