University of Gdańsk

Subject card

Subject name and code	Analytical chemistry, PG_00050791		
Field of study	Environmental Protection		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	undergraduate studies	Subject group	Obligatory subject group 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 Polish language
Semester of study	3	ECTS credits	2.0
Learning profile	academic	Assessment form	
Conducting unit	Pracownia Analityki i Radiochemii Środowiska -> Katedra Chemii i Radiochemii Środowiska -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Alicja Boryło	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	0.0	0.0	15

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	15	2.0	33.0	50

Subject objectives

The aim of the classes is to improve skills and familiarize students with all the issues mentioned in the lecture program, especially the analysis of compounds and mixtures. Chemical analysis can have three purposes: chemical qualitative analysis, chemical qualitative analysis, and chemical structural analysis

Learning outcomes

Course outcome	Subject outcome	Method of verification
[OŚL3_U02] Plans, selects appropriate research and measuring equipment and devices, performs physicochemical measurements and experiments; analyses the results and draws conclusions based on them.	Based on the planned and performed experiment, the student analyzes the results and formulates conclusions	[SU3] text preparation/written work [SU4] test/exam - oral or written
[OŚL3_K04] Demonstrates responsibility for the safety of her/ his own and others' work and for the workplace, and correctly follows the rules of conduct in emergencies.	The student is aware of how to correctly apply the rules of conduct in emergency situations	[SK3] text preparation/written work [SK4] test/exam - oral or written
[OŚL3_W11] Discusses measurement systems and analysis techniques used in monitoring the state of the natural environment.	Has knowledge of techniques used to monitor the natural environment	[SW4] test/exam - oral or written [SW3] text preparation/written work
[OŚL3_U07] Uses basic laboratory techniques, conducts field research and performs qualitative and quantitative analyses and draws conclusions on this basis for practical purposes.	Based on field research and qualitative and quantitative analyses, it formulates conclusions for practical purposes	[SU3] text preparation/written work [SU4] test/exam - oral or written
[OŚL3_W03] Operates mathematical, statistical and IT methods and tools in the description and interpretation of phenomena and processes occurring in the environment.	Knows mathematical and IT methods useful for describing phenomena occurring in the environment	[SW4] test/exam - oral or written [SW3] text preparation/written work
[OŚL3_W13] Defines the basic principles of occupational safety, ergonomics and hygiene.	Knows the basic principles of safety, ergonomics and occupational hygiene	[SW4] test/exam - oral or written [SW3] text preparation/written work
[OŚL3_U11] Uses statistical methods as well as algorithms and IT techniques, including application software packages to describe environmental experiments and analysis of typical data in socio-economic activities based on science and natural sciences.	Is able to use statistical methods for environmental experiments and analysis of environmental activities	[SU3] text preparation/written work [SU4] test/exam - oral or written

Subject contents

Validation of analytical methods

Chemical analysis

I group of cations

II group of cations

III group of cations

Qualitative analysis of selected anions

Manganometry

Redoximetry

Precipitation and complexometric analysis

Weight analysis

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">General and inorganic chemistry</td></tr>
<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>written exam</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">Jerzy Minczewski, Zygmunt Marczenko, Analytical chemistry, PWN, Warsaw, 2019, volumes 1 and 2

Jan Dobrowolski, Analytical chemistry, PZWL, Warsaw

Tadeusz Lipiec, Zdzisław Szmal, Analytical chemistry with elements of instrumental analysis, PZWL, Warsaw

Ryszard Kocjan, Analytical chemistry, PZWL, volume 1</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Andrzej Cygański, Chemical methods of quantitative analysis, WNT, Warsaw, 2017 (only for the second part, i.e. quantitative analysis)

Douglas A. Skoog, Donald M. West, James F. Holler, Stanley R. Crouch, Fundamentals of analytical chemistry, PWN, Warsaw

Lecture notes</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3"></td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
</table>

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