GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Analytical Chemistry II, PG_00068088		
Field of study	Biomedical Engineering		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2027/2028
Education level	first-cycle studies	Subject group	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	3	Language of instruction	Polish
Semester of study	5	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Chemistry and Technology of Functional Materials -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Ewa Wagner-Wysiecka	
	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	40.0	75

Subject objectives

The aim of the course is to familiarize students with the issues of modern analytical chemistry and analytical problem-solving methodology in practice.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W52] Knows and understands, to an advanced extent, selected aspects of chemistry and biochemistry, constituting general knowledge related to the field of study	The student has an advanced understanding of selected classical and instrumental analytical techniques and their applications in chemical analysis.	[SW1] Assessment of factual knowledge
[K6_U12] can analyze the operation of components, circuits and systems related to the field of study, as well as measure their parameters and examine technical specifications, and plan and conduct experiments related to the field of study, including computer simulations and measurements, and interpret obtained results and draw conclusions	The student is able to plan and carry out an analytical experiment using classical and instrumental analytical techniques, process the obtained measurement data, and assess their reliability.	[SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment

Subject contents

Course content – laboratory

Laboratory: Safety in laboratory. Calibration, standards preparation, sampling. Volumetric analysis precipitation titration. Gravimetric analysis. UV-Vis spectroscopy. Spectrofluorimetry IR spectroscopy. High performance chromatography. High performance chromatography coupled with mass spectrometry. Potentiometry.

Prerequisites and co-requisites

Knowledge of chemistry sufficient to follow the Analytical Chemistry course.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Short tests from laboratory classes, correctly performed determinations, reports on completed analyses.	51.0%	45.0%
Written exam covering topics from Analytical Chemistry I and Analytical Chemistry II	51.0%	55.0%

Recommended reading	Basic literature	1.J. Minczewski, Z. Marczenko Chemia analityczna t.1 i t.2 . PWN, W-wa, 2008 2. W. Szczepaniak Metody instrumentalne w analizie chemicznej. PWN, W-wa, 2012 3. D. Kealey, P.J. Haines Krótkie wykłady. Chemia analityczna. PWN, W-wa, 2015; 4. T. Lipiec, Z. Szmal Chemia analityczna z elementami analizy instrumentalnej. PZWL, W-wa,1997 5. D.A. Skoog, D.M. West, F.J. Holler, S.R. Crouch Podstawy chemii analitycznej. PWN, W-wa, 2006 6. A. Cygański, B. Ptaszyński, J. Krystek Obliczenia w chemii analitycznej . WNT, W-wa, 2000 7. A. Cygański Chemiczne metody analizy ilościowej. WNT, W-wa, 2017 8. Ćwiczenia rachunkowe z chemii analitycznej. Praca zbiorowa pod redakcją Z. Galusa, PWN, W-wa, 2013
	Supplementary literature	1. Miniaturyzacja w chemii analitycznej praca zbiorowa pod red. Z. Brzózki. Oficyna Wydawnicza Politechniki Warszawskiej , W-wa 2005 2. A. Cygański Metody spektroskopowe w chemii analitycznej. WNT, W-wa, 2017 3. A. Cygański Podstawy metod elektroanalitycznych. WNT, W-wa, 1999 4. A. Hulanicki Reakcje kwasów i zasad w chemii analitycznej. PWN, W-wa, 2016.
	eResources addresses	
Example issues/ example questions/ tasks being completed	1. What is mineralisation, what is its purpose, and what methods can be used to perform it? Give an example of a determination in which mineralisation is applied. 2. What requirements must a primary standard substance meet in titrimetric analysis? 3. What is acid-base titration (alkacimetry)? What are its types? What is the titrant in each case? Give an example of an acid-base titration. 4. Criteria for classification of instrumental methods in quantitative analysis.	
Practical activites within the subject	Not applicable	

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