GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Instrumental Analysis , PG_00048925		
Field of study	Chemistry in Construction Engineering		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2024/2025
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	4	Language of instruction	Polish
Semester of study	7	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Analytical Chemistry -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Mariusz Marć	
	Teachers	dr hab. inż. Mariusz Marć dr hab. inż. Justyna Płotka-Wasylka prof. dr hab. inż. Agata Kot-Wasik prof. dr hab. inż. Piotr Konieczka prof. dr hab. inż. Andrzej Wasik dr inż. Bartłomiej Cieślik dr inż. Natalia Jatkowska dr inż. Paweł Kubica	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	20.0	0.0	20.0	0.0	10.0	50

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	50	5.0	45.0	100

Subject objectives

Analytical process, instrumental analytical methods (primary and absolute methods, indirect methods); theoretical basis and description of selected instrumental analytical techniques (spectroscopic techniques; chromatographic and related techniques, combined techniques).

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W08	Has knowledge of the operation of analytical equipment and can determine the basic validation parameters of the analytical procedure	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
K6_U08	can design and carry out an experiment	[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information

Subject contents

Chromatographic techniques:- quantitative analysis in GC- chromatographic detectors - principle of operation and area of use- liquid chromatography- mass spectrometry in chromatographyCombined techniques - application in analyticsExtraction techniques as a step in preparing samples for analysis

Prerequisites and co-requisites

Basic knowledge in analytical chemistry of the theory of instrumental analytical methods.

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Seminar</td><td>50.0%</td><td>10.0%</td></tr>
<tr><td>Laboratory</td><td>50.0%</td><td>40.0%</td></tr>
<tr><td>Exam</td><td>50.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1.A. Cygański, Metody spektroskopowe w chemii analitycznej, WNT, Warszawa, 2002.2. Z. Witkiewicz, J. Hepter, Chromatografia gazowa, WNT, Warszawa, 2009.3. W. Szczepaniak, Metody instrumentalne w analizie chemicznej, PWN, Warszawa 20084. P. Konieczka P., Namieśnik J., Zygmunt B., Bulska E., Świtaj- Zawadka A., Naganowska A., Kremer E., Rompa M., Ocena i kontrola jakości wyników pomiarów analitycznych, WN-T, Warszawa 2007.5. M. Janicka, G. Bajger-Nowak, A. Kot-Wasik, Rozwiązywanie problemów w chromatografii cieczowej, Wydawnictwo PG, Gdańsk, 20126. Z. Witkiewicz, E. Śliwka, Chromatografia i techniki elektromigracyjne, Wydawnictwo Naukowe PWN, 20177. A. Jakimska, W. Hewelt-Belka, K. Wilczewska, A. Kot-Wasik, Nowoczesna chromatografia cieczowa, Wydawnictwo PG, Gdańsk, 2014</td></tr>
<tr><td>Supplementary literature</td><td>1. K. Kuklińska, A.Melnyk, B. Zabiegała, Spektrometr mas jako detektor chromatograficzny, połączenie GC-MS, Wydawnictwo PG, Gdańsk 2014

2. Metody analitycznej spektrometrii atomowej, [red.] W. Żyrnicki, J.Borkowska-Burnecka, E. Bulska, E. Szmyd, Malmut, Warszawa 2010.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:
ANALITYKA INSTRUMENTALNA _zima_2024 - Moodle ID: 40514
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=40514</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">-</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
</table>

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