GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Modern Analytical Techniques, PG_00048919		
Field of study	Chemistry in Construction Engineering		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2025/2026
Education level	first-cycle studies	Subject group	
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	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Analytical Chemistry -> Faculty of Chemistry -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Justyna Płotka-Wasylka	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	30.0	0.0	15.0	60

E-learning hours included: 0.0

eNauczanie source address: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=3783

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	60	5.0	35.0	100

Subject objectives

Acquaintance with modern analytical techniques in theory and practice that will enable analysis building materials, monitoring and analytics of environmental pollution originating from squares construction, emitted from building materials

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U06	After completing the course, the student will have knowledge of issues related to analytical techniques, which can be used for analysis and pollution monitoring building materials and construction sites.	[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment
K6_W03	After completing the course, the student will have knowledge of issues related to analytical techniques, which can be used for analysis and pollution monitoring building materials and construction sites.	[SW1] Assessment of factual knowledge
K6_W08	The student is able to analyze phenomena and provide methods for them analysis and monitoring, so much needed in terms of construction	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge

Subject contents	1. Spectroscopic techniques used to analyze building materials 2. Theoretical and practical basics in the use of chromatographic techniques. Analysis of building materials and processing of received data. 3. Chemical sensors, an electronic nose type used to analyze and monitor release pollution from building materials. 4. Micro-extraction techniques used to prepare samples for analysis. Building materials and their solid, liquid and gas impurities.
Prerequisites and co-requisites	Basic knowledge of chemistry.Knowledge of the dangers arising from emissions of building materials.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
lab	60.0%	45.0%
seminas	60.0%	10.0%
lecture	60.0%	45.0%

Recommended reading

Basic literature	1. Marian Kamiński, Podstawowe pojęcia i parametry opisujące układy chromatograficzne. Podstawowe zasady efektywnego stosowania chromatografii cieczowej do rozdzielania i oznaczania składu mieszanin, PG, 2010 2. Praca zbiorowa pod redakcj M. Kamiskiego Chromatografia cieczowa, CEEM, Gdask, 2004. 3. D. Berek, M. Dressler, M. Kubin, K. Marcinka Chromatografia elowa PWN Warszawa 1989. 4. European Committee for Standardization, Safety of toys. Organic chemical compounds. Methods of analysis, BS EN 71-11:2005 5. M. Marć, B. Zabiegała, J. Namieśnik, Trends Anal. Chem., 32 (2012) 76 6. A. Kot-Wasik, B. Zabiegała, M. Urbanowicz, E. Dominiak, A. Wasik, J. Namieśnik, Anal. Chim. Acta 602 (2007) 141 7. M. Urbanowicz, B. Zabiegała, J. Namieśnik, Anal. Bioanal. Chem., 399 (2011) 277 8. A. Cygański, Podstawy metod elektroanalitycznych, WNT, Warszawa, 1999. 9. S L R Ellison, A Williams, Quantifying Uncertainty in Analytical Measurement, EURACHEM/CITA, 2011.
Supplementary literature	J. Warych, Oczyszczanie przemysłowycy gazów odlotowych, WNT, Warszawa, 1988. W. Lewandowski, Techniczno-technologiczne i aparaturowe aspekty ochrony powietrza, Wydawnictwo Poli-techniki Gdańskiej, Gdańsk, 2011
eResources addresses	

Example issues/ example questions/ tasks being completed	Gas chromatography, liquid chromatography, spectroscopic techniques, sensors, electronic night, qualitative analysis, quantitative analysis, building materials, dust emissions from building materials and construction sites, monitoring, road infrastructure and environmental pollution
Work placement	Not applicable

Document generated electronically. Does not require a seal or signature.