University of Gdańsk

Subject card

Subject name and code	Engineering lecture - Selected techniques used for physicochemical analysis in industry and diagnostics, PG_00080705		
Field of study	Chemical Business		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2027/2028
Education level	undergraduate studies	Subject group	Obligatory subject group in the field of study Optional subject group
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	2.0
Learning profile	academic	Assessment form	
Conducting unit	Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Aleksandra Dąbrowska	
	Teachers		

Lesson types						
Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	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	
	Learning modern techniques of physicochemical analysis and preparation for the use of these techniques in professional work, both in industrial and medical laboratories. Acquiring theoretical and practical knowledge regarding analytical methods, their principles of operation, applications and limitations. Developing the ability to critically evaluate and interpret the operating parameters of the devices discussed and analyze source texts.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BCHINŻ_W06] Enumerates basic unit processes and describes issues in the field of technology and chemical engineering.	Effective use of analytical techniques in industry and diagnostics thanks to advanced knowledge of unit processes and issues in the field of chemical technology and engineering.	[SW4] test/exam - oral or written
[BCHINŻ_U08] Uses the chemical nomenclature and engineering terminology properly.	The ability to properly use chemical nomenclature and engineering terminology, which is necessary for effective communication and work in the field of physicochemical analysis in industry and diagnostics.	[SU4] test/exam - oral or written
[BCHINŻ_U09] Using the acquired knowledge, skills and various sources of scientific information independently prepares written papers and oral presentations.	Effective communication of your discoveries and conclusions thanks to the use of a wide range of sources of scientific information and the ability to independently prepare written works and oral presentations.	[SU4] test/exam - oral or written
[BCHINŻ_W05] Describes the life cycle of devices, facilities and technical systems as well as modern environment-friendly technical solutions.	Conscious and responsible use of analytical techniques in industry and diagnostics thanks to advanced knowledge of the life cycle of analytical devices and modern, pro-ecological technical solutions.	[SW4] test/exam - oral or written
[BCHINŻ_K01] Identifies the level of her/his own knowledge and skills as well as the need to update engineering knowledge, continuous professional training and personal development.	Awareness of the need for continuous education and updating of engineering knowledge, which is crucial for effective functioning in the dynamically developing field of physicochemical analysis in industry and diagnostics.	[SK4] test/exam - oral or written
[BCHINŻ_W07] Describes the construction and operating principles of basic scientific, technological and control-measuring apparatus.	Possessing advanced knowledge of the structure and principles of operation of scientific, technological and control and measurement equipment, which allows for the effective use of these tools in physicochemical analysis in industry and diagnostics.	[SW4] test/exam - oral or written

Subject contents

The importance of physicochemical analysis in industry, pharmacy, medicine and modern laboratory diagnostics. Review of basic analytical methods (spectroscopic methods, separation methods, chromatographic methods, thermal analysis, electrochemical techniques, PCR, methods for testing surface-active substances). Trends and novelties in physicochemical analysis (new techniques and their potential applications, review of the latest research and publications).

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
test (part I)	51.0%	33.0%
test (part II)	51.0%	33.0%
test (part III)	51.0%	34.0%

Recommended reading

Basic literature

1. L. E. Reubseat, G. Tyge, *Chromatography*, Wydawnictwo Wiley Vch Verlag Gmbh (2019).
2. D. Corradini, T.M. Philips, *Handbook of HPLC*, CRC Press (2011).
3. J. Kenkel, *Analytical Chemistry for Technicians* Third Edition, CRC Press LLC (2003)
4. S.A.Bustin, *The PCR Revolution*, Cambridge University Press (2010).
5. A.Longobardi Giva, Flow *Cytometry, First Principles*, A John Wiley and Sons inc. New York (2001).
6. T.F. Tadros, *Applied Surfactants.Principles and Applicatons*, Wiley Vch Verlag Gmbh (2005).

Supplementary literature

Books and scientific publications indicated by the lecturer.

eResources addresses

Podstawowe

https://bg.ug.edu.pl/ - books, e-books, academic and scientific publications

Uzupełniające

Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable

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