

COURSE DESCRIPTION CARD

Faculty of Civil Engineering and Environmental Sciences									
Field of study								Degree level and programme type	
Specialization/ diploma path								Study profile	Academic profile
Course name	Analytical chemistry							Course code	IS-FCEE-00227S/W
								Course type	Erasmus
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	Summer/winter
		15	30					No. of ECTS credits	4
Entry requirements	General chemistry								
Course objectives	The aim of the course is to learn students different classical analytical (titration methods, gravimetric analysis) and instrumental methods (such as spectroscopy or chromatography) used in the analysis of liquid samples.								
Course content	<p>CLASSES: Stoichiometric calculations performed during titration analysis; pH calculations; solubility product constant calculations; concentration conversion.</p> <p>LABORATORY: Determination of the most important physicochemical parameters of water samples including: water hardness, content of chloride ions, sulfate ions, nitrate ions, cations of various metals, selected organic compounds and many other by the use of weight method, titration, spectrophotometric, flame photometry, high performance liquid chromatography.</p>								
Teaching methods	classes – calculations; research laboratory								
Assessment method	classes – tests, colloquium; laboratory - reports, tests before each laboratory, colloquium								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
LO1	student knows the basic methods of physico-chemical analysis							IS-FCEE-00022_W07	
LO2	student can use basic laboratory equipment, plan and carry out simple chemical experiments, interpret the obtained results, perform appropriate calculations and draw correct conclusions as well as develop documentation of completed experiment							IS-FCEE-00022_U02	
LO3	student can obtain information from the scientific literature and other sources; properly use the acquired information, can verify them and interpret them							IS-FCEE-00022_U15	

L04	student is ready to explain cognitive and practical problems, consults other people in the event of a problem	IS-FCEE-00022_K03	
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed	
L01	test, colloquium	LC	
L02	colloquium, laboratory report	C, LC	
L03	test, colloquium, laboratory report	LC	
L04	colloquium	C, LC	
Student workload (in hours)		No. of hours	
Calculation	attendance at classes	15	
	attendance at laboratory classes	30	
	preparation for tests, colloquiums; preparation of reports	30	
	attendance at consultations	5	
	TOTAL:	80	
Quantitative indicators		HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation		50	2
Student workload – practical activities		60	2
Basic references	M. Kalinowska, M. Samsonowicz, G. Świdorski, R. Świsłocka, M. Walery, "Practical analytical techniques used to determine selected physicochemical indicators of water quality", Białystok University of Technology, 2021 https://wb.pb.edu.pl/2021/12/14/skrypt-dydaktyczny-praktyczne-techniki-analityczne-stosowane-do-okreslania-wybranych-fizykochemicznych-wskaznikow-jakosci-wody/ Saternus M., Fornalczyk A., Chemistry for every student, Politechnika Śląska, Gliwice, 2013 Chojnacki J., Dołęga A., Dręczewski B. Selected topics in general and inorganic chemistry, Politechnika Gdańska, Gdańsk, 2001 Instructions for laboratory exercises, available at the Department of Chemistry, Biology and Biotechnology		
Supplementary references	Crowe J., Bradshaw T., Chemistry for the Bioscience, Oxford University Press, Oxford, 2010. Housecroft C.E., Inorganic chemistry, Pearson Education, Harlow, 2008		
Organisational unit conducting the course	Department of Chemistry, Biology and Biotechnology	Date of issuing the programme	
Author of the programme	Assoc. Prof. Monika Kalinowska, DSc, PhD	10.03.2023	

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar