


KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez
Unię Europejską w ramach
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Course title			ECTS code	
Analytical chemistry			7.2.0503	
Name of unit administrating study				
null				
Studies				
faculty		field of study	type	pierwszego stopnia
Wydział Chemii		Ochrona środowiska	form	stacjonarne
			specjalty	wszystkie
			specialization	wszystkie
Teaching staff				
dr hab. Alicja Boryło, profesor uczelni; dr Grzegorz Olszewski; dr hab. Dagmara Strumińska-Parulska, profesor uczelni; mgr Aleksandra Moniakowska				
Forms of classes, the realization and number of hours			ECTS credits	
Forms of classes			5	
Auditorium classes, Laboratory classes, Lecture			classes - 60 h	
The realization of activities			Tutorial classes- 10 h	
classroom instruction			Student's own work- 55 h	
Number of hours			TOTAL: 125 h - 5 ECTS	
Lecture: 15 hours, Laboratory classes: 30 hours, Auditorium classes: 15 hours				
The academic cycle				
2023/2024 winter semester				
Type of course		Language of instruction		
obligatory		polish		
Teaching methods		Form and method of assessment and basic criteria for eveluation or examination requirements		
<ul style="list-style-type: none">- conducting experiments- multimedia-based lecture- problem solving		Final evaluation		
		<ul style="list-style-type: none">- Graded credit- Examination		
		Assessment methods		
		<ul style="list-style-type: none">- written exam with open questions- (mid-term / end-term) test- oral exam		
		The basic criteria for evaluation		
		The basic criteria for evaluation 1. positive grade of the written exam consisting of 30-40 open questions covering the issues listed in the lecture syllabus content and selected types of tasks of the auditorium training, 2. oral exam - supplement to the written exam, but only for those students who obtained 30-50% of points available in the written exam 3. auditorium training - demonstrating the ability to solve chemical tasks – test (1) in the field of stoichiometry, solution concentrations, ionic equilibrium solutions (pH, buffer solutions, solubility product, complex connections) and (2) interpretation and analysis of analytical titration results, 4. laboratory training - positive assessment of the entrance tests covering the subject of six experiments performed as part of the laboratory practice, the implementation of the experimental part covered by the classes syllabus and the development of results obtained during the exercises		
Method of verifvng required learning outcomes				

Required courses and introductory requirements

A. Formal requirements

Formal requirements
General and Inorganic Chemistry

B. Prerequisites

Prerequisites
General and Inorganic Chemistry

Aims of education

Aims of education
familiarizing students with all issues listed in the lecture syllabus content,
introducing students to the basics of chemical calculations in the field of analytical chemistry,
developing the skills of independent experimentation and problem solving during conducting a chemical experiment (qualitative and quantitative analysis).

Course contents

Course contents
The subject matter of the lecture: standard and non-nominated solutions. Selected methods of analysis of inorganic compounds: the basics of qualitative and quantitative analysis, alkacymetry, permanganometry, chromianometry, iodometry, complexometric titration and weight analysis. Analyte concentration and mineralization of environmental samples. Statistical processing of analytical results: precision, accuracy, blank sample, linear regression, errors and their transfer, detection of thick errors.
Problems of auditorium training: basic types of calculation tasks related to concentrations and chemical reactions with particular emphasis on equilibria in solutions, oxidation-reduction reactions, methods of balancing chemical reaction equations, the basics of chemical calculations in the field of alkacymetry, redoximetry and complexometry.
The subject matter of laboratory exercises: the basics of laboratory work, conducting six exercises / experiments thematically related to the above-mentioned lecture program.

Bibliography of literature

Bibliography of literature
J. Minczewski i Z. Marczenko – Chemia analityczna, PWN, Warszawa, 2009,
T. Lipiec, Z. Szmal – Chemia analityczna z uwzględnieniem półmikroanalizy jakościowej, PZWL, Warszawa
L.F. Hamilton, S.G. Simpson, D.W. Ellis – Obliczenia w chemii analitycznej, WNT, Warszawa 1973,
Ćwiczenia rachunkowe z chemii analitycznej pod redakcją Z. Galusa, PWN, Warszawa 2009,
M. Wesołowski. K. Szefer, D. Zimna – Zbiór zadań z chemii analitycznej, Warszawa 2002.
A. Cygański, B. Ptaszyński, J. Krystek – Obliczenia w chemii analitycznej, WN-T, Warszawa 2000 B. Extracurricular readings

The learning outcomes (for the field of study and specialization)

Knowledge

Skills

Social competence

Contact

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