

Course title Laboratorium zaawansowanej chemii – chemia bionieorganiczna / Advanced chemistry laboratory - bioinorganic chemistry		ECTS code 13.3.0433	
Name of unit administrating study Faculty of Chemistry			
Studies			
Field of study	Type	Form	
Chemistry	Masters	Full-time studies	
Teaching staff dr hab. Dagmara Jacewicz, prof. nadzw., dr Aleksandra Tesmar, dr Dariusz Wyrzykowski			
Forms of classes, the realization and number of hours		ECTS credits 1	
A. Forms of classes, in accordance with the UG Rector's regulations laboratory classes		classes - 20 h tutorial classes – 2 h student's own work – 3 h	
B. The realization of activities laboratory experiments, in-class learning		Total: 25 h - 1 ECTS	
C. Number of hours 20 h laboratory class			
The academic cycle First year, winter semester			
Type of course obligatory		Language of instruction Polish	
Teaching methods Practical laboratory work - chemical experiments, analysis of obtained results and discussion		Form and method of assessment and basic criteria for evaluation or examination requirements	
		A. Final evaluation, in accordance with the UG study regulations lab classes – Course credit with a grade	
		B. Assessment methods Lab classes – completion with note	
		C. The basic criteria for evaluation or exam requirements Lab classes - execution of laboratory exercises, correct preparation of reports from conducted laboratory work, obtaining a positive assessment from a test that includes laboratory exercises	
Required courses and introductory requirements Completed inorganic chemistry course			
Aims of education - a continuation and extension of the course of inorganic, physical and coordination chemistry - the aim of the course is to acquaint students with the fundamental procedures of the examination of compounds of biological interest - this laboratory is intended to familiarize students with a designing of an experiment, an interpretation of the data and the methods of a visualization and a presentation of the results - a presentation the most important contemporary issues related to the investigation of the biological properties of the compounds based on the chemical tests - a development of the ability for planning and carrying out a single-handed experiments as well as for interpreting obtained data			
Course contents Laboratory techniques used for investigating of coordination compounds. The stopped flow method for studying reaction kinetics. Isothermal titration calorimetry for studying macromolecule - ligand interactions. The use of various buffer solutions for the preparation of biological samples for chemical tests. Familiarizing with the support of computer programs used for analysis and presentation of the results obtained.			

Bibliography of literature

A. Literature required to pass the course

S. Gaisford, M. A. A. O'Neill, "Pharmaceutical Isothermal Calorimetry", Informa Healthcare USA, Inc., NY (2007)

J. Keeler, "Kinetics of Chemical Reactions", University of Cambridge, Department of Chemistry, 25, IA Chemistry 2002/03

B. Extracurricular readings

L. Stryer, J. L. Tymoczko, J. M. Berg, „Biochemistry”, 5 Edition 2005

Knowledge

Correct nomenclature in relation to the study of kinetics and thermodynamics of chemical compounds.

Knowledge of chemical processes and reactions in which complex compounds take part.

Knowledge of advanced techniques for testing complex compounds in solutions.

Knowledge of the use of advanced techniques for testing complex compounds used in various industries.

Skills

Support for advanced research instruments used to study complex compounds used in various industries.

Support for computer programs used to perform physicochemical calculations and data visualization.

Planning and conducting chemical experiments using advanced measurement techniques.

Solving practical problems using spectrophotometric and calorimetric methods.

Predicting observations and formulating conclusions resulting from conducted chemical experiments. Justifying the opinions presented.

Social competence

Using chemical knowledge in correlation with other natural sciences to explain the course of phenomena encountered in everyday life.

The ability to use the acquired knowledge to assess the threat and planning ways to counteract the threats to human health and the environment

Correct identification and resolution of dilemmas related to the performance of chemical experiments involving inorganic and coordination compounds.

Understanding the social aspects of the practical application of the acquired knowledge and skills and the related responsibility.