UNIWERSYTET GDAŃSKI

Course title
Laboratorium zaawansowanej chemii - chemia analityczna/Advanced chemistry laboratory - analytical chemistry

ECTS code
13.3.0445

Name of unit administrating study
Faculty of Chemistry

Studies

Field of study	Type	Form	
Chemistry	Master	Full-time studies	

dr Paweł Niedziałkowski

Forms of classes, the realization and number of hours

A. Forms of classes, in accordance with the UG Rector's regulations
Laboratory classes

B. The realization of activities
In-class learning

C. Number of hours
Laboratory classes 20 h

ECTS credits
classes 20 h
Tutorial classes 5 h
Student's own work 25 h
TOTAL: 50 h - 2 ECTS

The academic cycle
2019/2020 winter semester

Type of course
obligatory

Language of instruction
Polish

Teaching methods
Laboratory experiments

Form and method of assessment and basic criteria for evaluation or examination requirements

A. Final evaluation, in accordance with the UG study regulations
Course completion (with a grade), exam

B. Assessment methods
Performing of coursework - performing a specific practical work
The final mark will be determined on the basis of the partial marks received during the semester

C. The basic criteria for evaluation or exam requirements
- performing of the experiment (30% of the final mark)
- presentation of obtained results in the form of a report (30%)
- report – the problem task (20%)
- test (20%)

Required courses and introductory requirements
Completed courses of: general chemistry, analytical chemistry and physical chemistry
knowledge of chemical nomenclature, the ability of apply basic stoichiometry formulas, calculation of the solution concentrations, the ability to use of laboratory glass, the ability to use the basic laboratory instruments, application of the safety rules in a chemical laboratory

Aims of education
Acquaintance with modern research techniques in analytical chemistry.
Developing of the skill to choose the optimal research method for a given problem.
Developing of the skills of independent detection and determination of various chemical substances.

Acquiring of proficiency in the estimating the expected result and determination of the sources and scale of occurring errors during experiments.

Course contents

Acquaintance with modern methods used in analytical and instrumental chemistry. Presentation of research problems and performing discussion on the selection of an advanced analytical method. Quantitative analysis of selected compounds (e.g. determination of the content of dyes in leaves and flowers, fluorides in toothpastes, phosphates: in water, drinks and washing powders, acids in drinks, caffeine in coffee)

Bibliography of literature

A. Literature required to pass the course

1. Chemia Analityczna Kealey D., Haines P.
2. Chemia Analityczna. Analiza Instrumentalna Kocjan, R.
3. Fundamentals of Analytical Chemistry Skoog D. Crouch Stanley R., Holler James F.,West Donald M.

Knowledge

1. Recognizes and describes the methods used in instrumental analysis in the determination of chemical compounds used in everyday life.
2. Describes the physicochemical properties of substances occurring in the natural environment.
3. Cites and understands the basic concepts and principles of industrial property protection and copyright.
4. Estimates the expected analysis result.
5. Analyzes the value of the determination error and its potential sources.

Skills

1. Plans and uses the appropriate methods to solve the given analytical problem.
2. Develops the given problem in the field of the application of advanced analytical methods.
3. Organizes the workplace in accordance with the requirements of the analysis of the chemical substance and according to BHP rules -Occupational Safety and Health Administration (OSHA) rules.
4. Critically evaluate obtained results during the analysis.
5. Discusses and integrate the information obtained in the group to verify the research hypothesis.

Social competence

1. Takes the challenge of conducting advanced chemical analyzes.
2. Can estimate the content of components present in chemical substances used in everyday life.