UNIWERSYTET GDAŃSKI

Course title Monitoring środowiska/Environment monitoring	**ECTS code** 7.2.0481

Name of unit administrating study

Faculty of Chemistry

Studies

Field of study	Type	Form	
Environmental Protection	Bachelor	Full-time studies	

Teaching staff
Dr hab. Magda Caban

Forms of classes, the realization and number of hours	**ECTS credits**
A. Forms of classes, in accordance with the UG Rector's regulations lecture, laboratory classes	classes - 90 h tutorial classes - 6 h student's own work - h TOTAL: 150 h - 6 ECTS
B. The realization of activities In-class learning	
C. Number of hours lecture 45 h, laboratory classes - 45 h	

The academic cycle
Second year, sammer semester

Type of course obligatory	**Language of instruction** Polish
Teaching methods Lectures including multimodal presentations Laboratoty 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** **The basic criteria for evaluation** • Lecture - a requirement for positive grade is to obtain a min. 51% of points from the exam covering the scope of material carried out during lectures and laboratory exercises - the negative grade can be improved by an additional exam in the material carried out during lectures and laboratory exercises (min. 51% of points available) • Laboratory exercises - The grade will be a weighted average of grades from the final colloquium of all laboratory material (40%), partial tests (40%) and reports (20%). - negative grade can be improved by an additional colloquium from the material covering the entire range of exercises (min 51% of points possible)

Required courses and introductory requirements

A. Formal requirements General biology, General chemistry, Analytical chemistry

Prerequisites Knowledge of physicochemical properties of chemical compounds important in their determination, theoretical foundations of analytical methods

Aims of education

• To familiarize students with all issues listed in the lecture program content
• To familiarize students with basic information on environmental monitoring systems, the type of water, soil and atmosphere pollution, methods of measuring pollution in environmental samples
• To familiarize students with the basics of biological monitoring, including maritime specificity
• Introducing students to the basics of calculations necessary for the correct interpretation of results
• Developing the skills of design of the analytical process and solving the problem during measurements

Course contents

A. Lecture topics: General information about the objectives and principles of environmental monitoring, National Environmental Monitoring, national and international monitoring networks, collection and processing of environmental data. Quality standards for elements of the environment. Methods of measuring impurities (reference methods), spectroscopic and chromatographic methods, titration methods and others. Processing of analytical data and their statistical evaluation. Standardization of methods and laboratories. The principles of integrated monitoring. The role of remote sensing and GIS. Biological monitoring. Environmental monitoring of the Baltic Sea.
B. Laboratory issues: Preparation of environmental samples for proper analysis (extraction, liquid chromatography). Analysis of environmental pollution by selected techniques: titration analysis, UV / Vis spectroscopy, thin layer chromatography. Air quality assessment based on measurement results obtained at an air monitoring station.

Bibliography of literature

A. Literature required to pass the course

Stepnowski P., Synak E., Szafranek B., Kaczyński Z. *Monitoring i analityka zanieczyszczeń w środowisku*, Wydawnictwo UG, Gdańsk 2010.
Stepnowski P., Synak E., Szafranek B., Kaczyński Z. *Monitoring i analityka zanieczyszczeń w środowisku*, Wydawnictwo UG, Gdańsk 2010.

B. Extracurricular readings

Namieśnik J., Chrzanowski W., Szpinek P. (Red.) *Nowe Horyzonty i Wyzwania w Analityce i Monitoringu Środowiska*, CDAMŚ Gdańsk, 2003.
Staszewski R. *Kontrola chemicznych zanieczyszczeń środowiska, Podstawy teoretyczne z ćwiczeniami laboratoryjnymi*, Politechnika Gdańska, Gdańsk, 1990.
Namieśnik J. *Metody instrumentalne w kontroli zanieczyszczeń środowiska*, Politechnika Gdańska, Gdańsk, 1992.
Kocjan R. *Chemia analityczna. Podręcznik dla studentów*. Tom 2. PZWL, Warszawa, 2000.
Szczepaniak W., *Metody instrumentalne w analizie chemicznej*, PWN, Warszawa, 1996.