UNIVERSITY OF WARMIA AND MAZURY
Faculty of Agriculture and Forestry

Course description

01S1-CHNI **INORGANIC CHEMISTRY** **ECTS: 5.0**

HOURS PER SEMESTER/WEEK: LECTURES: 10/1; CLASSES: 20/2

COURSE CONTENTS

LECTURES: Structure of the atom, orbitals. Chemical bonds. Fundamentals of chemical kinetics. Characteristics of inorganic compounds. Solutions. Solubility and solubility product. Acid-base equilibria in water solutions. The concept of pH. The importance of pH in agricultural sciences. Calculations of the pH of strong and weak electrolytes. Salt hydrolysis. Buffer solutions. Chemistry of complex compounds. Oxidation and reduction reactions. Background of volumetric analysis.

CLASSES: Reactions taking place in water solutions. Qualitative analysis of selected cations and anions, salt analysis. Writing of chemical reactions. Preparation of solutions of specific concentration and associated calculations. Laboratory measurement of pH of solutions. Volumetric analysis: alkacymetry, manganometry and complexometry. Safety rules for work in a chemical laboratory.

EDUCATIONAL PURPOSE: Learning the basics of general and inorganic chemistry needed in further studies. Acquiring the ability to use basic laboratory equipment, perform simple chemical analyses and interpret their results.

LEARNING OUTCOMES

Knowledge. The student has basic knowledge of chemistry necessary to understand the changes taking place in organisms live and in nature.
Skills. The student can use the equations of chemical reactions to present the course of processes taking place in water solutions. Uses terminology and chemical nomenclature in the field of inorganic chemistry. Uses basic laboratory techniques. Can independently perform simple qualitative and quantitative analyses.
Social competences. The student can work in a group, performing various functions in it. He/she understands the need for lifelong learning. The student knows the safety rules when working in a chemical laboratory.

TEACHING FORMS AND METHODS

Lectures. Information lecture with multimedia presentation.
Classes. Laboratory classes - performing laboratory tasks in small teams of 2 students.

FORM AND CONDITIONS FOR VERIFICATION OF LEARNING OUTCOMES

Lectures. Written test - credit with a grade.
Classes. Written test - credit with grade.

BASIC LITERATURE

1) Ebbing D.D., Gammon S.D., General Chemistry. Houghton Mifflin Company, Boston, USA. 2009

ADDITIONAL LITERATURE

1) Chemistry. OpenStax College, Rice University, Houston, 2015. Available on line: https://web.ung.edu › Chemistry2 › Chemistry-LR

THE TEACHER/S CONDUCTING THE CLASSES:

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