SUBJECT: INORGANIC AND ANALYTICAL CHEMISTRY, Consumer and environmental protection (Ist Year of study, Ist Semester)

Credit value (ECTS) 5

Course category: mandatory

Course holder: Lecturer Ph.D. Alina Elena TROFIN

Discipline objectives (course and practical works)

The course is aimed at acquiring information on inorganic chemistry, the study of chemical elements and combinations, the properties and importance of the main types of chemical systems found in living organisms and soil or directly related to them, acquiring basic knowledge of chemistry on the classification and properties of substances and their role in soil-water-plant circuit.

Practical work is aimed at acquiring lab techniques on general operations carried out in chemical analysis and interpretation of results.

Contents (syllabus)

Course (chapters/subchapters)
Introductive notes: matter, body, substance, atom, formulas and chemical reactions
The atom's structure: general concepts, electronic structure of the atom, atomic models
Periodic table: structure, system models, periodic and non-periodic properties of the elements
Chemical bonds (ionic, covalent, coordinative, metallic, specific and non-specific intermolecular bonds)
The chemical reaction: electron transfer reactions, proton transfer reactions
Homogeneous disperse systems: dissolution process, concentrations of solutions
Elements and combinations: characterization of the elements in the periodic table groups

Practical works
Processing work safety and firefighting rules in chemistry lab. Introduction to analytical chemistry
The concentrations of the solutions
Volumetric neutralization reactions. Determination of a sodium hydroxide solution concentration
Volumetric neutralization reactions. Determination of a sulfuric acid solution concentration
Volumetric neutralization reactions. Determination of an acetic acid solution concentration
Volumetric oxidation-reduction reactions: permanganometry
Volumetric oxidation-reduction reactions. Determination of Fe^{+2} ion in the compounds. Identification of the ions Fe^{+2}, Fe^{+3}
Volumetric oxidation-reduction reactions: iodometry. Determination of the concentration of a solution of sodium thiosulfate

Volumetric oxidation-reduction reactions: iodometry. Determination of the concentration of a solution of iodine
Volumetric oxidation-reduction reactions. Determination of a solution of sulphite (SO_3^{2-})
Complexometry. Determination of water hardness.
Volumetric precipitation reactions. The dosage of chlorine ions by Mohr's method.
Volumetric precipitation reactions. The dosage of chlorine ion by Volhard's method.
Verification test

Bibliography

1. Constantinescu C. - Chimie anorganică şi analitică, Ed. Did. Ped. Buc., 1982
2. Trofin Alina – Chimie anorganică, curs, Ed. USAMV, Iasi, 2005
3. Trofin Alina, Ungureanu Elena – Chimie anorganică şi analitică, lucrări practice, Editura PIM, Iaşi, 2011

Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Course	Exam	60 %
	attendance	10 %
Practical works	Tests (theory and practice)	30 %

Contact

Trofin Alina Elena
Faculty of Horticulture - USAMV Iași
Aleea Mihail Sadoveanu nr. 3, Iași, 700490, Romania
Tel: 0040 232 407551, fax: 0040 232 219175

E-mail: atrofin@uaiasi.ro