

SUBJECT: INORGANIC AND ANALYTICAL CHEMISTRY, Technology of Agricultural Products Processing (Ist Year of study, Ist Semester)

Credit value (ECTS) 4

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) |
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| Introductory 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 |
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| 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 |

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| 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 și analitică, Ed. Did. Ped. Buc., 1982
2. Trofin Alina – Chimie anorganică, curs, Ed. USAMV, Iasi, 2005
3. Trofin Alina, Ungureanu Elena – Chimie anorganică și analitică, lucrări practice, Editura PIM, Iași, 2011

Evaluation

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

Contact

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