

## **TEACHING DISCIPLINE: GENERAL CHEMISTRY, IMAA, I<sup>st</sup> year, 1<sup>st</sup> semester**

**Credit value (ECTS): 4**

**Course category: mandatory**

**Course holder: Trofin Alina Elena**

### **Discipline objectives (course and practical works)**

- accumulation of general chemistry knowledge and the ability to apply them in understanding the specialized disciplines
- acquiring the fundamental notions of chemistry regarding the study of chemical elements and combinations, as well as the properties and importance of the main types of chemical systems encountered in living organisms or in direct relation with them;
- acquiring laboratory techniques and interpreting chemical analyzes.

### **Contents (syllabus)**

<b>Course (chapters/subchapters)</b>
1. Introductory notions: matter, body, substance, atom, formulas and chemical reactions
2. Chemical bonds
2.1. Ionic bond (electrovalence)
2.2. Covalent (covalence) and coordinative bond
2.3. Metallic bond
2.4. Specific and nonspecific intermolecular bonds
3. Chemical reaction
3.1. Electron transfer reactions
3.2. Proton transfer reactions
4. Homogeneous dispersed systems
4.1. Dissolution
4.2. Concentrations of solutions
5. Elements and combinations
5.1. Distribution of elements
5.2. Types of combinations
5.3. Characterization of the elements of the periodic system groups
6. Chemical thermodynamics
6.1. Thermodynamic principles
6.2. The laws of thermochemistry
7. Chemical kinetics
7.1. Reaction speed
7.2. Chemical equilibria in homogeneous and heterogeneous systems
8. Heterogeneous dispersed systems
8.1. Classification
8.2. Methods of preparation
8.3. Characteristic properties
8.4. Methods of purification

<b>Practical works</b>
1. Processing of labor protection norms and P.S.I. in the chemistry laboratory. Introduction to analytical chemistry
2. Solutions concentrations
3. Volumetry by neutralization reactions. Determination of the concentration of a sulfuric acid solution
4. Volumetry by oxidation-reduction reactions: permanganometry
5. Volumetry by oxidation-reduction reactions: iodometry. Determination of the concentration of an iodine solution
6. Complexometry. Determination of water hardness. Ion identification: calcium, magnesium, carbonate
7. Knowledge verification test

### **Bibliography**

1. Nenițescu D.C. - *Chimie generală*, Ed. Did. Ped. Buc., 1980
2. Trofin A. – *Chimie generală*, Ed. StudIS, Iasi, 2018
3. Trofin A., Ungureanu E. – *Chimie anorganica si analitica*, Ed. PIM, 2011
4. Trofin A., Ungureanu E. – *Aplicații de chimie generală*, lucrări practice, Editura PIM, Iași, 2013

### **Evaluation**

<b>Evaluation form</b>	<b>Evaluation Methods</b>	<b>Percentage of the final grade</b>
Course	Exam	70 %
	presence	10 %
Practical works	Tests (theory and practice)	20 %

### **Contact**

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