

**86S1-PCHA**

**FUNDAMENTALS OF ANALYTICAL CHEMISTRY**

**ECTS: 3.0**

**HOURS PER SEMESTER/WEEK:** LECTURES: 15/1; CLASSES: 45/3

**FIELD OF THE STUDY:** Chemistry

**Level of study:** First-cycle (Bachelor's degree) program

**Course status:** obligatory \*

**Year of the study:** I

#### **COURSE CONTENTS**

**LECTURES:** Fundamentals of inorganic analytical chemistry, basic laws, and relationship, chemical literature. Laboratory equipment. Sampling for analysis. Types of classical methods of qualitative and quantitative analysis. Equilibrium in aqueous solutions. Qualitative analysis as non-numerical information about a chemical species, a reaction, and the composition of the sample. A systematic analysis of inorganic material to ascertain its composition. Characteristic reactions and properties of inorganic ions.

**CLASSES:** The student learns how to use the laboratory equipment and laboratory glassware. Practical use of classical analytical methods of quantitative analysis. Elaboration of the final report on the analytical analysis carried out.

**EDUCATIONAL PURPOSE:** To ground knowledge of the basics of chemistry. To provide knowledge on the basics of inorganic analytical chemistry and to make the students familiar with basic laboratory techniques used in qualitative analyses. To develop the ability to select the appropriate analytical method to solve issues related to the qualitative analysis.

#### **LEARNING OUTCOMES**

**Knowledge.** The student explains and applies the basic law of analytical chemistry. He knows the rules of a systematic analysis of inorganic ions.

**Skills.** The student confidently uses classical methods of analytical chemistry. He can apply the principles of health and safety in the laboratory. The student selects appropriate conditions and appropriate analytical techniques depending on the analyzed compounds. He correctly interprets the results of the analytical measurements. The student knows the names and formulas of chemical compounds used in analytical chemistry and writes correctly the reactions that have been carried out.

**Social competences.** The student evaluates objectively the contribution of one's own work and that of others in the joint research and report preparation. He applies the health and safety rules in a lab.

#### **TEACHING FORMS AND METHODS**

**Lectures.** Information lecture, Lecture with a multimedia presentation of selected issues.

**Classes.** Discussion, Case study, Laboratory methods, Demonstration and observation, Work in groups.

#### **FORM AND CONDITIONS FOR VERIFICATION OF LEARNING OUTCOMES**

**Lectures.** written test - credit with a grade.

**Classes.** written test - credit with grade.

#### **BASIC LITERATURE**

1) Skoog D.A., West D.M., Holler F.J., Crouch S.R. 2014. Fundamental of Analytical Chemistry. Ninth edition. Brooks/Cole, Cengage Learning

#### **ADDITIONAL LITERATURE**

1) Fifield F.W., Kealey D. 2000. Principles and Practice of Analytical Chemistry. Wyd. Wiley-Blackwell

#### **THE TEACHER/TEACHERS CONDUCTING THE CLASSES:**

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