

86S1-CHEMAN

ANALYTICAL CHEMISTRY

ECTS: 9.0

HOURS PER SEMESTER/WEEK: LECTURES: 30/2; CLASSES: 105/7

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: Basic concepts of classical quantitative analysis. Titration analysis - general part, division of titrimetric methods (alkalimetry, redoximetry, complexometry, precipitation titration analyses. Concepts of Equivalence Point and Endpoints, types of titration methods (direct, indirect and reverse). Evaluation of analytical results.

CLASSES: Exercises: Quantitative analysis of substances in solution (alkalimetry, redoximetry, complexometry, precipitation, weight analysis).

EDUCATIONAL PURPOSE: To impart knowledge of inorganic analytical chemistry and to familiarise with basic laboratory techniques and equipment used in quantitative analysis. To become familiar with the basic methods used in the quantitative analysis of inorganic compounds. To reinforce the ability to correctly interpret obtained test results. To develop skills of independent laboratory work, communication and teamwork. To consolidate and develop knowledge of health and safety at work and to develop the ability to apply it.

LEARNING OUTCOMES

Knowledge. The student lists the basic laws and theories of chemistry. Student describes the properties of the elements and most important chemical compounds and methods of their analysis. The student characterises the basic methods of analysing chemical compounds.

Skills. The student identifies, analyses and solves problems in the broad field of chemistry on the basis of the acquired knowledge. The student carries out analyses using experimental methods and formulates conclusions on their basis. The student selects appropriate laboratory equipment to carry out basic chemical experiments. The student presents basic facts of chemistry in an accessible way, using scientific language expected in the chemical sciences.

Social competences. The student forms informed opinions in the field of Natural Sciences, applying caution and criticism in their expression.

TEACHING FORMS AND METHODS

Lectures. Information lecture, lecture with multimedia presentation.

Classes. Laboratory classes - performing experiments.

FORM AND CONDITIONS FOR VERIFICATION OF LEARNING OUTCOMES

Lectures. Written test - credit with grade.

Classes. Written test - credit with grade.

BASIC LITERATURE

1) Skoog D.A., West D.M, Holler F.J, Crouch S.R. 2014. Fundamentals of Analytical Chemistry. Brooks/Cole, Belmont, USA. (Available on-line: <https://www.cengage.com>)

ADDITIONAL LITERATURE

1) Ham B., MaHam A. 2015. Analytical Chemistry: A Chemist and Laboratory Technician's Toolkit, USA

THE TEACHER/TEACHERS CONDUCTING THE CLASSES:

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