

86S1-PCHF2

FUNDAMENTALS OF PHYSICAL CHEMISTRY II

ECTS: 4.0

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: II

COURSE CONTENTS

LECTURES: Physicochemical basis of spectroscopy, postulates of quantum mechanics, quantization of energy, absorption of electromagnetic radiation, selection rules, models describing the basic types of spectroscopy (IR, MW, UV/vis, NMR), description of electrons in atoms and molecules, chemical bonds, weak intermolecular interactions.

CLASSES: Lambert-Beer law, determination of acidity constant by spectrophotometric method, determination of CMC, viscosity of polymers, association in solutions by IR and NMR methods, tautomeric equilibria, Hammett constants.

EDUCATIONAL PURPOSE: Learning the fundamentals of physical chemistry.

LEARNING OUTCOMES

Knowledge. The student knows the physicochemical phenomena in the scope presented during lectures and classes.

Skills. Student can operate laboratory equipment, he understands issues in the field of physical chemistry, he can determine physicochemical parameters and apply statistical methods of experimental data analysis.

Social competences. Student understands the need for lifelong learning. Can work in a group, performing various functions in it.

TEACHING FORMS AND METHODS

Lectures. Lecture with multimedia presentation.

Classes. Laboratory classes - performing laboratory tasks in small teams of 2.

FORM AND CONDITIONS FOR VERIFICATION OF LEARNING OUTCOMES

Lectures. Written test - credit with a grade.

Classes. Execution and completion of reports on the experiments performed. Oral/written test- credit with grade.

BASIC LITERATURE

1) Atkins P.W. 2003. Chemia fizyczna, PWN, Warszawa 2) Atkins P., de Paula J. 2016. Chemia fizyczna, PWN, Warszawa. 3) Pigoń K., Ruziewicz K. 2005. Chemia fizyczna. 1. Podstawy fenomenologiczne i 2. Fizykochemia molekularna, PWN, Warszawa 4) Buchowski H., Ufnalski W. 1994. Podstawy termodynamiki, WNT Warszawa

ADDITIONAL LITERATURE

1) L. Smoczyński, S. Kalinowski, J. Wasilewski, F. Karczyński 2000. Podstawy chemii fizycznej z ćwiczeniami, Wydawnictwo UWM

THE TEACHER/TEACHERS CONDUCTING THE CLASSES:

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