Level: bachelor

Course title: Physical Chemistry 1

Status: obligatory

ECTS: 8

Requirements: none

Learning objectives

To provide students with the necessary theoretical and practical knowledge in selected topics of physical chemistry as a basis for further understanding and application in other fields of chemistry. Development of practical skills and the ability to apply a standard methodology to solve problems in various fields of chemistry.

Learning outcomes

Upon successful completion of this course, student will be able to list the major topics of physical chemistry (intermolecular interactions, chemical thermodynamics); Apply knowledge in solving problems in different fields of physical chemistry; Measure important physico-chemical properties of substances on relevant instruments; Interpret experimental results and write reports.

Syllabus

Theoretical instruction

Structure of molecules and molecular spectra. Behaviour of molecules in electrical field. Optical rotation, ORD and CD. Solid and liquid states of matter. Ideal and real gases. Chemical thermodynamics. Chemical equilibrium. Phase equilibrium. Transport phenomena.

Practical instruction

Optical determination of the physical chemistry

1. Determination of the spectral characteristics of alkaline and alkaline earth metals, 2. Molar refraction Determination of the refractive index of liquids, 3. Determination of specific optical rotation of optical active substances, 4. Colorimetry-Determination of the linear molar absorption coefficient

Determination of physico-chemical properties of pure fluids

1. Determination of the molecular weight of volatile compounds by Viktor-Mayer-method 2. Determination of vapour pressure and enthalpy of vaporisation by static method 3. Viscosity-Determination of the activation energy of viscous flow, 4. Determination of surface tension of liquids

Thermochemical determination

1. Thermochemistry-Calorimetric determination of enthalpy of dissolution 2. Thermochemistry-Calorimetric determination of enthalpy of neutralization 3. Thermal Analysis 4. Determination of partial molar volumes.

Weekly teaching load				Other:
Lectures: 3	Exercises: 3	Other forms of teaching: 1	Student research:	