

KARTA PRZEDMIOTU

Nazwa przedmiotu: Organic physical chemistry (WTCCXCSM-OPCh)

Nazwa w języku polskim:

Nazwa w jęz. angielskim: Organic physical chemistry

Dane dotyczące przedmiotu:

Jednostka oferująca przedmiot: Wydział Nowych Technologii i Chemii
Przedmiot dla jednostki: Wydział Nowych Technologii i Chemii
Cykl dydaktyczny: Semestr letni 2024/2025
Koordynator przedmiotu cyklu: dr hab. inż. Henryk Grajek

Domyślny typ protokołu dla przedmiotu:

Zaliczenie na ocenę

Język wykładowy:

angielski

Skrócony opis:

DIDACTIC METHODS

The extended knowledge on organic physical chemistry will be presented during the lectures. Some of the lectures will be extended by the auditorium and the laboratory exercises in order to accomplish all requirements to pass the exam.

Opis:

The extended knowledge on the selected branches of organic physical chemistry will be presented during the lectures. Some of the lectures will be extended by the auditorium exercises in order to accomplish all requirements to pass the exam.

REQUIREMENTS FOR THE SUBJECT'S ACCEPTANCE

The subject must be finished by the exam.

Literatura:

BIBLIOGRAPHY

A. Obligatory:

1. J.H. Noggle, Physical Chemistry, Harper Collins Publishers, 1989;
2. P.W. Atkins, Physical Chemistry, Oxford University Press, Oxford, 1994;
3. G.M. Barrow, Physical Chemistry, The McGraw-Hill Companies, Inc., New York, 1997;
4. J.R. Conder, C.L. Young, Physicochemical Measurements by Inverse Gas Chromatography, John Wiley & Sons, New York, 1979.

B. Complementary:

1. T.W.G. Solomons, C.B. Fryle, Organic Chemistry, Wiley, New York, 2004.

Efekty uczenia się:

ESTABLISHED EDUCATION EFFECTS

Symbol(Education effects)/Treatment to the education effects for the subject of study:

W1 Student has:

1. the extended and consolidated knowledge within the scope of analytical and organic chemistry (K_W02), involved:

- a. the periodic law;
- b. the electronic configurations of atoms and molecules;
- c. the electronic theory of valence;
- d. the electronic-vibration-rotation;
- e. analytical chemistry;
- f. thermodynamics.

2. the basic ideas about the coordination of compounds and inorganic poly-mers (K_W02);

3. the basic rules of quantum, statistical and molecular mechanics (K_W02);

4. the extended knowledge enabling justification of the chosen analytical procedure./K_U03,K_U04,K_K03

Student knows:

1. the databases on electrochemistry, chromatography, spectroscopy, and thermodynamics, and knows how to employ their contents (K_U07);

2. how to evaluate the precision, confidence, and prediction limits for the obtained analytical results (K_U08);

3. how to plan and perform chemical experiments in the manner to abide by the rules for safety and health at laboratory work (K_U07);

4. how to determine the chemical composition and structure of unknown substances (K_U07). /K_U08,K_K03

Metody i kryteria oceniania:

Assessment methods and criteria:

The subject is credited based on an exam and passing the auditorium exercises.

1) The exam is conducted in a written form, which is scored with points. The student receives a 3.0 mark for getting 60%, a 3.5 mark for getting 70%, a 4.0 mark for getting 75%, a 4.5 mark for getting 80%, and a 5.0 mark for getting more than 85% of the maximum number of points.

2) The condition for admission to the exam is passing the auditorium exercises.

3) Necessary condition to obtain credit: passing the test in problem-solving skills. The student receives a mark of 3.0 for the correct solution of three, a mark of 4.0 for the right solution of four and a mark of 5.0 for the correct answer of five tasks.

Praktyki zawodowe:

Not applicable

Autor

Dr Hab. Henryk GRAJEK

Bilans ECTS	
ACTIVITY/STUDENT WORKLOAD in HOURS: 1. Participation in lectures / 16 2. Self-reliant studies of the lecture topics / 8 3. Participation in the exercises / 14 4. Individual preparation for the exercises / 8 5. Participation in the consultations / 6 6. Preparation for exams / 6 7. Participation in the exams with a pass mark / 2 Aggregate of the student workload: 60 / 2 ECTS Classes with the teachers: 38 / 1 ECTS	
Forma studiów	
stacjonarne	
Forma zajęć liczba godzin/rygor	
The orientation and background I.2 Molecular structure and symmetry. Valence-bond theory. Molecular orbital theory. I.6 The symmetry elements of objects. The electric and magnetic properties of molecules. I.2 Molecules in motion (in gases and liquids). I.2 State functions, exact and inexact differentials. I.4 ex.4 The basic concepts: work, heat, energy, enthalpy, and entropy. Standard enthalpy changes. I.4 ex.4 The physical transformations of pure substances. Phase stability and phase transitions. The Ehrenfest classification of phase transitions. I.4 The properties of surfaces. The basic surface phenomena. I.6 Surface analysis methods. I.6 Physisorption and chemisorption. Adsorption and catalysis. I.4 ex.4 Total I.40 ex.6	
Programy	
Field of study: chemistry	
Przedmioty wprowadzające	
INTRODUCTORY SUBJECTS AND PRELIMINARY REQUIREMENTS The advanced knowledge of: 1. the general chemistry, 2. the analytical chemistry, 3. the organic chemistry 4. the instrumental analysis	
Rodzaj studiów	
II stopnia	
Dane dotyczące przedmiotu cyklu:	
Domyślny typ protokołu dla przedmiotu cyklu:	
Zaliczenie na ocenę	

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Podpis