KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI
Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego
UNIA EUROPEJSKA
EUROPEJSKI FUNDUSZ SPOŁECZNY

Course title	ECTS code
Advanced chemistry laboratory - bioorganic chemistry	13.3.0479

Name of unit administrating study

Faculty of Chemistry

Studies

faculty	field of study		
Wydział Chemii	Chemia	type	drugiego stopnia
		form	stacjonarne
		specialty	analityka i diagnostyka chemiczna, chemia obliczeniowa
		specialization	wszystkie

Teaching staff

dr Katarzyna Guzow

Forms of classes, the realization and number of hours

Forms of classes

Laboratory classes

The realization of activities

classroom instruction

Number of hours

Laboratory classes: 20 hours

ECTS credits

1
classes - 20 h
tutorial classes – 2 h
student's own work – 3 h

Total: 25 h - 1 ECTS

The academic cycle

2023/2024 winter semester

Type of course

obligatory

Language of instruction

Polish

Teaching methods

- conducting experiments
- discussion
- problem solving

Form and method of assessment and basic criteria for eveluation or examination requirements

Final evaluation

Graded credit

Assessment methods

- ssignment work – conducting research and presenting results
- (mid-term / end-term) test

The basic criteria for evaluation

Assessment work includes the performance of the experimental activities provided for in the program and the presentation of their results along with a discussion in the form of a written report (50% of the final grade)
The assessment covers:
a) the method of performing experiments (effectiveness and correctness of the applied procedures, compliance with safety rules, self-reliance, ability to analyze the obtained results)
b) the manner of presenting performed experiments in the report (substantive correctness, extent of subject exhaustion, formal job evaluation, linguistic correctness)
A written test consisting of closed and open questions covering all the issues discussed during the laboratory exercises (50% of the final grade)

Method of verifying required learning outcomes

Required courses and introductory requirements

A. Formal requirements

Completed courses: organic chemistry, physical chemistry, molecular spectroscopy, biochemistry

B. Prerequisites

Knowledge of organic and physical chemistry and biochemistry at the level of first-cycle studies, knowledge of basic principles of safety and hygiene

at work in the chemical laboratory, knowledge of the basic aspects of the construction and operation of spectral apparatus learned in the course "Physical chemistry", the ability to synthesize simple organic compounds based on procedures, the ability to perform basic chemical calculations

Aims of education

• Getting to know students with modern techniques used in bioorganic chemistry, including chemical modifications of biologically active compounds and studies of intermolecular interaction
• Teaching students how to conduct experiments in the field of bioorganic chemistry and analysis of the obtained results

Course contents

a/ isolation of the enzyme from vegetable or fruit, determination of its activity and kinetic parameters using spectrophotometric methods
b/ chemical modification of the protein carried out under different conditions (pH, reaction time, presence of denaturant) and determination of the degree of protein labeling by spectroscopic methods (UV-Vis absorption, fluorimetry)
c/ study of intermolecular interactions between ligand (fluorescent amino acid or peptide) and cyclodextrin (drug carrier or model system of the receptor binding cavity) by spectrofluorimetric methods

Bibliography of literature

Literature required to pass the course
• J. McMurry “Chemia Organiczna”, PWN Warszawa, 2000
• L. Stryer „Biochemia” PWN, Warszawa, 1997
• J. A. Baltrop, J. D. Coyle, Fotochemia, podstawy, PWN, Warszawa 1987
• P. W. Atkins, Chemia Fizyczna, PWN, Warszawa, 2001
B. Extracurricular readings
P. Kafarski, B. Lejczak „Chemia Bioorganiczna” PWN, Warszawa, 1994

The learning outcomes (for the field of study and specialization)

Knowledge

• can name and describe applied methods of chemical modification of biologically active compounds during the project implementation
• characterizes the individual experimental techniques used during the exercise
• identifies scientific and research equipment that he encountered during project implementation and explains the principles of its operation

Skills

• demonstrates the ability to chemically modify biologically active compounds
• analyzes and verifies the obtained experimental results
• draws conclusions from the conducted experiments
• presents the results of research in the form of a prepared report, containing a description and justification of the purpose of the work and the adopted methodology as well as the results and their discussion

Social competence

a/ is able to work and cooperate in a group, taking on different roles
b/ cares about work safety while performing experiments
c/ observes the arrangements regarding the experiments carried out

Contact

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