KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego

UNIA EUROPEJSKA
EUROPEJSKI
FUNDUSZ SPOŁECZNY

Course title	ECTS code
Monographic lecture - Selected issues in chemistry of peptides	13.3.1234

Name of unit administrating study

Faculty of Chemistry

Studies

faculty	field of study		
Wydział Chemii	Biznes chemiczny	type	drugiego stopnia
		form	stacjonarne
		specialty	wszystkie
		specialization	wszystkie

Teaching staff

prof. dr hab. Sylwia Rodziewicz-Motowidło; dr Katarzyna Guzow; dr inż. Irena Bylińska; dr hab. Aneta Szymańska, profesor uczelni

Forms of classes, the realization and number of hours

Forms of classes

Lecture

The realization of activities

classroom instruction

Number of hours

Lecture: 30 hours

ECTS credits

3
classes 30 hours
consultation 10 hours
student's own work 35 hours
TOTAL: 75 hours - 3 ECTS

The academic cycle

2023/2024 winter semester

Type of course

obligatory

Language of instruction

polish

Teaching methods

- multimedia-based lecture
- problem-focused lecture

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

Final evaluation

Graded credit

Assessment methods

written test with test and open questions

The basic criteria for evaluation

The final grade will be issued on the basis of one final test in the whole subject. In the case of failure, the negative assessment can be improved by writing another written test. The grades from the test will be in accordance with the guidelines set out in the "University of Gdansk Studies Regulations"

Method of verifying required learning outcomes

Required courses and introductory requirements

A. Formal requirements

Formal requirements: completed courses in the field of organic chemistry, biochemistry, physical chemistry, chemical spectroscopy, instrumental analysis, specialization lecture "Peptide synthesis"

B. Prerequisites

Prerequisites:

• knowledge of basic issues in the field of experimental and theoretical organic chemistry, biochemistry (with particular knowledge of basic biochemical processes)

• knowledge of the structure of amino acids, peptides and proteins,

• knowledge of chemical spectroscopy (NMR, CD, UV, IR spectroscopy), physical chemistry (with particular emphasis on knowledge of thermodynamic processes)

Aims of education

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• Getting to know of students with all issues listed in the lecture program content,
• Getting to know of students with the issues of the division and role of peptides and proteins in nature with particular reference to man,
• Getting to know of students with examples of the use of spectroscopic techniques (including mass spectrometry, spectrofluorimetry, CD, IR, UV-VIS, NMR, DSC) for structural studies of biomolecules
• Developing the ability to independently select the appropriate physicochemical method to track conformational changes occurring in peptides and proteins under the influence of changes in the external environment.

Course contents

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• The use of basic spectroscopic techniques, ie: circular dichroism spectropolarometry (CD), infrared spectroscopy (FTIR), mass spectrometry (MS), NMR spectroscopy, fluorescence, mass spectrometry (MS) and differential micro-calorimetry (DSC)) in research physicochemical biomolecules.
• The use of spectroscopic techniques to determine the spatial structure of peptides and proteins.
• Physicochemical methods for tracking conformational changes of peptides and proteins - selected examples of proteins.

Bibliography of literature

Bibliography of literature
Literature required to pass the course
A. Literature required for the final passing of classes (passing the exam):
A.1. used during classes
A.2. studied independently by the student
H.-D. Jakubke, H Jeschkeit, "Amino acids, peptides, proteins", PWN, Warsaw 1989.
A.M. Brzozowski, A. Hrynkiewicz, E. Rokita, "Biospetroscopy", PWN, Warsaw 1989.
I.Z. Siemion, "Biostereochemia", PWN, Warsaw 1985.
J.M. Berg, J.L. Tymoczko, L. Stryer, "Biochemia", PWN, Warsaw 2007.
W. Zieliński, A. Rajca, "Spectroscopic methods and their application to the identification of organic compounds", WNT, Warsaw 2000.
Extracurricular readings

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

Knowledge

Knowledge
• describes the biological functions of peptides and proteins,
• describes the types of chemical bonds stabilizing the spatial structures of biomolecules,
• describes individual classes of peptides and proteins,
• describes the basics of spectroscopic and calorimetric techniques,
• characterizes processes occurring in peptides and proteins under the influence of various external factors

Skills

Skills
analyzes spectroscopy and spectrometry spectra (CD, NMR, IR, MS) of biomolecules,
independently plans the method of biomolecule analysis using physicochemical techniques,
verifies and criticizes the results of physicochemical analyzes
discusses in a substantive manner the topic presented in the lectures,
finds necessary information in specialist literature, databases and other sources in both Polish and English
presents in an accessible and factually correct way a review of collected literature information on a given topic
independently searches for information in the chemical literature
works on exploring English-language literature on the subject of the master thesis and tasks

Social competence

Social competence
• maintains criticism when analyzing the results and drawing conclusions
• maintains criticism in expressing opinions and is open to the opinions of the environment
• is active in deepening knowledge and understands the need for continuous learning
• undertakes to familiarize with a new topic or technique
• involved in scientific discussions
• understands the need to read scientific and popular science magazines, the basic

	topics of the MA thesis, in order to broaden and deepen knowledge

Contact

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