KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego

UNIA EUROPEJSKA
EUROPEJSKI
FUNDUSZ SPOŁECZNY

Course title

Diploma lecture - Chemistry and biochemistry of selected biomolecules

ECTS code

13.3.0499

Name of unit administrating study

null

Studies

faculty	field of study		
Wydział Chemii	Chemia	type	pierwszego stopnia
		form	stacjonarne
		specialty	chemia biomedyczna, chemia kosmetyków, analityka i diagnostyka chemiczna, chemia żywności
		specialization	wszystkie

Teaching staff

prof. dr hab. Krzysztof Rolka; prof. dr hab. Piotr Rekowski

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

2
lecture 30 hours
consultation 5 hours
student's own work 15 hours

TOTAL: 50 hours - 2 ECTS credits

The academic cycle

2024/2025 summer semester

Type of course

obligatory

Language of instruction

polish

Teaching methods

multimedia-based lecture

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

Final evaluation

Graded credit

Assessment methods

- written exam with open questions
- graded course credit based on individual grades obtained during the semester

The basic criteria for evaluation

Positive grade received in written exam composed of 6 open questions covering issues listed in the course contents; answers to these questions will require solving tasks specified in educational outcomes; the grade scale will be adjusted to the total number of points that could be obtained in the exam. Negative grade should be improved at repeat exam. The applied grading criteria will be in accordance with UG study regulations

Method of verifying required learning outcomes

Required courses and introductory requirements

A. Formal requirements

The student should have completed a graduate study lectures ((bachelor level): "Organic chemistry", “Biochemistry” and “Polymer chemistry”.

B. Prerequisites

Basic knowledge in organic chemistry and biochemistry

Aims of education

• introduction students with all issues listed in the lecture program content,

• making students familiar with the basic groups of biomolecules - their structures and functions,
• making students familiar with the basic methods of bioanalytical chemistry used for identification and quantitative and qualitative analysis of organic compounds occurring in living organisms.

Course contents

Analysis of biomolecules by liquid chromatography methods: thin layer chromatography, size exclusion, adsorption chromatography, separation in reverse-phase system, ion exchange chromatography, affinity chromatography. Gel and capillary electrophoresis. Mass spectrometry. Sequential analysis of nucleic acids and proteins. Hormones and neurotransmitters: structures and functions. Bacterial cell wall: structure and function. Antibiotics: classification and chemical structures. Ikosanoids: metabolism, chemical structures, biological functions. Xenobiotics. Fundamentals of chemical synthesis of peptides and nucleic acids. Chemical structures and biological functions of peptides, proteins, nucleic acids and polysaccharides. Examples of protein (peptide) – nucleic acid interactions.

Bibliography of literature

Literature required to pass the course
J. M. Berg, J. L. Tymoczko, L. Stryer, „Biochemia”, PWN, Warszawa 2009.

Extracurricular readings
Monographic materials provided by the lecturers or chosen by students

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

Knowledge

1. Defines and describes chemical structures of selected macro- and biomolecules;
2. Describes the biological functions of naturally occurring compounds;
3. Describes the interactions between biomolecules;
4. Characterizes analytical techniques applied for analysis of endogenous organic compounds.

Skills

Uses chemical terminology necessary to present the content of the course;
Understands the role of naturally occurring compounds in processes taking place in living organisms;
Can search for information in specialist literature

Social competence

Understands the need for continuous education;
Shows cautious criticism when acquiring knowledge, especially information coming from mass media;
Is aware of the necessity of fair and reliable work;
Can look at individual work with criticism.

Contact

krzysztof.rolka@ug.edu.pl