

Course title Wykład monograficzny – Biologicznie czynne peptydy/Monographic lecture - Biologically active peptides		ECTS code 13.3.1113	
Name of unit administrating study Faculty of Chemistry			
Studies			
Field of study	Type	Form	
Chemical business	Master	Full-time studies	
Teaching staff Prof. dr hab. Krzysztof Rolka			
Forms of classes, the realization and number of hours		ECTS credits lecture 30 hours consultation 10 hours student's own work 35 hours TOTAL: 75 hours - 3 ECTS credits	
A. Forms of classes, in accordance with the UG Rector’s regulations Lecture			
B. The realization of activities lecture in the didactic room			
Number of hours 30 hours			
The academic cycle Second year, summer semester			
Type of course obligatory		Language of instruction Polish	
Teaching methods Lecture with multimedia presentation		Form and method of assessment and basic criteria for evaluation or examination requirements	
		A. Final evaluation, in accordance with the UG study regulations Course completion (with a grade)	
		B. Assessment methods Written exam with open questions	
		C. The basic criteria for evaluation or exam requirements Positive grade received in written exam composed of 5 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	
Required courses and introductory requirements Formal requirements The student should have completed a graduate study lecture: "Physicochemical properties of amino acids and their derivatives"			
Aims of education • introduction students with all issues listed in the lecture program content, • discussion of the stereochemistry of peptides and proteins, • familiarizing students with the basic classes of endogenous peptides, their structures and functions			

- teaching students how to design of peptides, peptidomimetics of the presumed biological activity
- familiarizing students with peptidic drugs

Course contents

Lecture topics: Geometry of the amide bond, definitions of torsion angles of polypeptide chains. Canonical secondary, tertiary and quaternary structure. Application of combinatorial chemistry methods for the selection of peptides of the presumed biological activity (design, chemical synthesis and peptide libraries deconvolution). Peptide hormones and protein precursors. Plant peptides. Peptides with antibacterial and antifungal activity. Peptides with anticancer activity. Peptide vaccines. Peptides with immunological activity. Peptides extracted from toxins of different animal species. Opioid peptides. Peptidomimetics and peptide conjugates. The relationship between the structure and activity of the biologically active peptides. Prospects for application of peptides in diagnosis and therapy. Examples of peptidic drugs.

Bibliography of literature

A. Literature required to pass the course

1. Handbook of biologically active peptides (A.J. Kerstin, red.) Elsevier 2006,
2. Combinatorial peptide and nonpeptide libraries (G. Jung, red.) VCH 1996,
3. N. Sewald, H. Jakubke, "Peptides: chemistry and biology", Wiley-VCH Verlag,
4. Monographic papers provided by the lecturer

B. Extracurricular readings

Other monographic works presenting issues contained in the lecture content of the subject

Knowledge

1. Defines the basic issues of peptide biochemistry and biology;
2. Defines of torsion angles of polypeptide chains;
3. Defines of canonical secondary, tertiary and quaternary structures;
4. Give examples of structures and functions of endogenous peptides;
5. Characterizes peptidomimetics and peptide conjugates;
6. Names and characterize examples of peptidic drugs;
7. Characterizes methods of combinatorial chemistry;
8. Presents principle of structure-activity-relationships (SAR) studies of peptides.

Skills

1. Uses chemical terminology necessary to present the content of the course;
2. Understands the role of biologically active peptides and peptidomimetics in processes taking place in living organisms;
3. Can design peptides and peptidomimetics with the presumed biological activity
4. Can search for information in scientific literature.

Social competence

1. Understands the need for continuous education;
2. Appreciates the usefulness of discussions and consultations;
3. Is aware of the need for critical analysis of own work;
4. Shows creativity in searching for alternative solutions