

Course title Laboratorium zaawansowanej chemii - chemia bioorganiczna / Advanced chemistry laboratory - bioorganic chemistry		ECTS code 13.3.0479	
Name of unit administrating study Faculty of Chemistry			
Studies			
Field of study	Type	Form	
Chemistry	Masters	Full-time studies	
Teaching staff Prof. dr hab. Wiesław Wiczak			
Forms of classes, the realization and number of hours		ECTS credits 1	
A. Forms of classes, in accordance with the UG Rector's regulations laboratory classes		classes - 20 h tutorial classes – 2 h student's own work – 3 h	
B. The realization of activities in-class learning		Total: 25 h - 1 ECTS	
C. Number of hours 20 h laboratory classes			
The academic cycle First year, winter semester			
Type of course obligatory		Language of instruction Polish	
Teaching methods solving tasks discussion		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 performance of the final work - performing experiments and presenting their results	
		C. The basic criteria for evaluation or exam requirements 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 The ratings are subject to: a) the method of performing experiments (effectiveness and correctness of the applied procedures, observance of safety rules, self-reliance, ability to analyze the obtained results) b) the manner of presentation of performed experiments in the report (substantive correctness, extent of subject exhaustion, formal job evaluation, linguistic correctness)	
Required courses and introductory requirements Completed courses: organic chemistry, physical chemistry, molecular spectroscopy, biochemistry 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 <ul style="list-style-type: none"> • 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/ performing the synthesis of a non-protein amino acid that is a fluorescent marker and its use in the synthesis of solid-supported peptides
- 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 (fluorescing amino acid or peptide) and cyclodextrin (drug carrier or model system of the receptor binding cavity) by spectrofluorimetric methods
- d/ examination of the tyrosinase enzyme content in vegetables

Bibliography of literature

A. 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. Literatura uzupełniająca

- P. Kafarski, B. Lejczak „Chemia Bioorganiczna” PWN, Warszawa, 1994

B. Extracurricular readings

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