

FACULTY OF CHEMISTRY

SUBJECT CARD

Name of subject in English: Bioorganic Chemistry
 Main field of study (if applicable): Chemistry and Engineering of Materials
 Specialization (if applicable): Advanced Nano and Bio – materials- Monabiphot
 Profile: academic
 Level and form of studies: 2nd level, full-time
 Kind of subject: obligatory
 Subject code: CHC024068
 Group of courses: NO

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	30				
Number of hours of total student workload (CNPS)	90				
Form of crediting	Exam				
For group of courses mark (X) final course	X				
Number of ECTS points	3				
including number of ECTS points for practical (P) classes					
including number of ECTS points for direct teacher-student contact (BK) classes	1				

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Basic knowledge of organic and inorganic chemistry
2. Basic knowledge of spectroscopic methods
3. Knowledge of English
4. Basic knowledge of biochemistry

SUBJECT OBJECTIVES

- C1. To familiarize students with the issues of bioorganic chemistry
- C2. To familiarize students with the issues of biochemical mimetic processes
- C3. To familiarize students with the molecular receptors issues
- C4. To acquaint students with the structure, properties and use of particular groups of compounds used in bioorganic chemistry
- C5. To familiarize students with the practical possibilities of using individual groups of compounds as enzymatic mimetics and molecular receptors
- C6. To acquaint students with scientific literature and literature examples

SUBJECT EDUCATIONAL EFFECTS

related to knowledge:

- PEK_W01 – student knows what is what bioorganic chemistry is and knows the scope of its applicability
 PEK_W02 – student knows the properties of particular groups of compounds used in bioorganic chemistry
 PEK_W03 – student knows the use of the particular groups of compounds discussed in bioorganic chemistry
 PEK_W04 – student knows the types of interactions between molecules and knows what compounds form individual interactions

related to social competences:

- PEK_K01 student is able to work in a group, performing various roles including group leader
 PEK_K02 student is ready to critically evaluate his/her knowledge and received content

PROGRAMME CONTENT

Lectures		Number of hours
Lec 1	Presentation of the general characteristics of the subject	2
Lec 2	Peptide and protein mimetics	2
Lec 3	Mimetics of DNA and RNA nucleic acids	2
Lec 4	Construction, properties and application of cyclodextrins	2
Lec 5	Construction, properties and application of dendrimers	2
Lec 6	Structure, properties and application of cyclophanes	2
Lec 7	Designing, properties and application of calixarenes	2
Lec 8	Structure, properties and use of crown ethers and cyclic polyamines	2
Lec 9	Enzyme mimics - Molecular printing of polymers	2
Lec 10	Micellar catalysis, liposomes, fatty acid mimetics	2
Lec 11	Construction, properties and application of porphyrins	2
Lec 12	Carbohydrates and their derivatives	2
Lec 13	Receptors for compounds with diol moieties	2
Lec 14	The use of allotropic carbon varieties in bioorganic chemistry	2
Lec 15	Structure, properties and application of rotaxanes and catenanes	2
Total		30
TEACHING TOOLS USED		
Lecture N1 information lecture N2 problem lecture N3 multimedia presentation		
EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT		
Evaluation (F – forming (during semester), P – concluding (at semester end))	Educational effect number	Way of evaluating educational effect achievement
P Lecture	Oral exam	
PRIMARY AND SECONDARY LITERATURE		
BASIC AND SUPPLEMENTARY LITERATURE (SUBJECT WITHOUT DEVELOPING A LITERATURE IN POLISH LANGUAGE, IN ENGLISH, LITERATURE SPEAKER): [1] P. Kafarski, B. Lejczak, Bioorganic chemistry, PWN, Warsaw 1990 [2] MATERIALS FROM THE LECTURE [3] SCIENTIFIC MAGAZINES CONTAINING INFORMATION [4] KNOWLEDGE ON WWW PAGES. [5] P. Kafarski, P. Wieczorek, „Ćwiczenia laboratoryjne z chemii bioorganicznej”, Wydawnictwo Uniwersytetu Opolskiego, 1997. [6] B. Gierczyk, J. Kurczewska, G. Schroeder, „Pracownia z chemii supramolekularnej”, Poznań, 2008		
SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)		
Piotr Młynarz, piotr.mlynarz@pwr.edu.pl		