

KARTA PRZEDMIOTU**I. Dane podstawowe**

Nazwa przedmiotu	Chemia organiczna – kurs podstawowy
Nazwa przedmiotu w języku angielskim	Organic chemistry – basic course
Kierunek studiów	Biotechnologia
Poziom studiów (I, II, jednolite magisterskie)	I
Forma studiów (stacjonarne, niestacjonarne)	stacjonarne
Dyscyplina	
Język wykładowy	Grupy w języku polskim – język polski Grupy w języku angielskim – język angielski

Koordinator przedmiotu/osoba odpowiedzialna	dr Artur Banach
---	-----------------

Forma zajęć (<i>katalog zamknięty ze słownika</i>)	Liczba godzin	semestr	Punkty ECTS
wykład	30	II	6
konwersatorium	-	-	
ćwiczenia	30	II	
laboratorium	-	-	
warsztaty	-	-	
seminarium	-	-	
proseminarium	-	-	
lektorat	-	-	
praktyki	-	-	
zajęcia terenowe	-	-	
pracownia dyplomowa	-	-	
translatorium	-	-	
wizyta studyjna	-	-	

Wymagania wstępne	General Chemistry, Inorganic Chemistry, Physico-chemistry of Biological Systems
-------------------	---

II. Cele kształcenia dla przedmiotu

Acquire skills of the naming, writing formulas and classification main organic compounds, important for biotechnology, basing on their functional groups
Acquire knowledge about preparation and properties of organic compounds
Acquire skills of the assigning of biosphere components to suitable organic groups
Acquire practical skills of carrying out chemical reactions by students
Learning of the analytical methods and basics of synthesis of organics

III. Efekty uczenia się dla przedmiotu wraz z odniesieniem do efektów kierunkowych

Symbol	Opis efektu przedmiotowego	Odniesienie do efektu kierunkowego
WIEDZA		
W_01	Student describes issues in the field of organic chemistry required to understand and interpret basic natural phenomena and processes	K_W02
W_02	Student presents the principles of health, safety work and ergonomics, indicates the psychophysical possibilities of a human in the work environment in laboratory of organic chemistry	K_W09
UMIEJĘTNOŚCI		
U_01	Student applies techniques and research tools in the field of organic chemistry for biotechnology students	K_U01
U_02	Student carries out observations and performs chemical measurements	K_U02
U_03	Student describes, explains and interprets chemical and physicochemical phenomena at an advanced level	K_U08
U_04	Student performs qualitative and quantitative analyzes of organic compounds by using classical and instrumental method	K_U10
U_05	Student uses statistical methods and information technology to describe natural phenomena as well as to analyze and process experimental data	K_U14
U_06	Student designs and performs research tasks or expertise in the field of organic chemistry.	K_U15
KOMPETENCJE SPOŁECZNE		
K_01	Student possesses appropriate habits required to the work in scientific laboratories especially in organic chemistry, proceeds according to work safety regulations, knows how to react in states of danger.	K_K04

IV. Opis przedmiotu/ treści programowe

Lecture: The structure and properties of organic compounds – chemical bonds, electron configuration, polarity, intermolecular forces. Isomerism. The nomenclature of organic compounds. Saturated-, unsaturated hydrocarbons, aromatic hydrocarbons, alcohols, ethers, carboxylic acids, aldehydes, ketones, esters, amines, phenols, fats, carbohydrates – preparation, physical and chemical properties, mechanisms of reactions. Polymers, their structure and properties. Detergents and their properties. Amino acids and their properties. Peptides.

Classes: Safety principles for work in the Organic Chemistry Laboratory. General laboratory glassware and accessories used in the synthesis of organic compounds. Determination of organic carbon contents by means of Turin's method. Chemical properties of alkanes, alkenes and alkynes. Distillation of ethanol and determination properties of alcohols. Recognition of aldehydes and ketones. Carboxylic acids – characteristic reactions. Preparation of esters and ethers. Esterification reaction (primary, secondary and tertiary alcohols). Physical and chemical properties of lipids. Saponification reaction. Determination of iodine number. Extraction as an example of plant oil

isolation. Properties of arens – benzene and its derivatives as examples. Characteristic reactions of mono- and disaccharides. Determination of water hardness and detergents properties. Amino acids and proteins properties. Organic preparates purification by means of crystallization. Application on analytical tools in chemistry (statistics).

V. Metody realizacji i weryfikacji efektów uczenia się

Symbol efektu	Metody dydaktyczne (lista wyboru)	Metody weryfikacji (lista wyboru)	Sposoby dokumentacji (lista wyboru)
WIEDZA			
W_01	Conventional lecture Laboratory analysis	Written exam Test	Written exam Completed and evaluated test
W_02	Laboratory analysis	Observation	Rating card / Report from observation
UMIEJĘTNOŚCI			
U_01	Laboratory classes	Report	Protocol / Print / Report file
U_02	Laboratory classes	Report	Protocol / Print / Report file
U_03	Laboratory analysis	Test	Completed and evaluated test
U_04	Laboratory classes	Report	Protocol / Print / Report file
U_05	Laboratory classes	Report	Protocol / Print / Report file
U_06	Laboratory classes	Report	Protocol / Print / Report file
KOMPETENCJE SPOŁECZNE			
K_01	Laboratory classes	Observation	Rating card / Report from observation

VI. Kryteria oceny, wagi...

Lecture: Written exam in the form of test - 90%, participation in the lectures - 10%

Classes: 3 tests – 90%, active participation in the classes - 5%, preparation of report – 5%

Mark	Evaluation criteria	
very good (5)	the student realizes the assumed learning outcomes at a very good level	the student demonstrates knowledge of the education content at the level of 91-100%
overgood (4.5)	the student accomplishes the assumed learning outcomes an over good level	the student demonstrates knowledge of the education content at the level of 86-90 %
good(4)	the student accomplishes	the student demonstrates knowledge of

	the assumed learning outcomes at a good level	the education content at the level of 71-85%
quite good(3.5)	the student accomplishes the assumed learning outcomes at a quite good level	the student demonstrates knowledge of the education content at the level of 66-70%
sufficient (3)	the student accomplishes the assumed learning outcomes at a sufficient level	the student demonstrates knowledge of the education content at the level of 51-65%
insufficient (2)	the student accomplishes the assumed learning outcomes at an insufficient level	the student demonstrates knowledge of the education content below the level of 51%

VII. Obciążenie pracą studenta

Forma aktywności studenta	Liczba godzin
Liczba godzin kontaktowych z nauczycielem	60
Liczba godzin indywidualnej pracy studenta	90

VIII. Literatura

Literatura podstawowa
Morrison R.T. , Boyd R.N. Organic Chemistry, Prentice Hall; 6th edition, 1992. Bruice P.Y. Organic Chemistry, 6th Edition, Prentice Hall, Pearson Education, Inc. 2011. Clayden J., Greeves N., Warren N., Wothers P.: Organic chemistry, Oxford University Press, Oxford 2012. Clayden J., Warren S.: Solutions Manual to accompany Organic Chemistry, 2nd edition, Oxford University Press, Oxford 2013. Loudon G.M.: Organic Chemistry, 4th edition, Oxford University Press, Oxford 2002. Solomons G., Fryhle C., Snyder S., Organic Chemistry, 11e, John Wiley & Sons, Inc. 2014.
Literatura uzupełniająca
Bruckner R.: Organic mechanisms, Reactions, Stereochemistry and Synthesis, Springer-Verlag, Berlin 2010. Putz M.V.: Carbon Bonding and Structures, Advances in Physics and Chemistry, Springer Science+Business Media B.V. 2011. Seager S.L., Slabaugh M.R. Organic and Biochemistry for Today, 6th Edition, Brooks/Cole, a division of Thomson Learning, Inc. 2008. Parsons A.F. Keynotes in Organic Chemistry, Blackwell Science Ltd. 2003.