

Attachment no. 4. to the Program of Studies

FACULTY of CHEMISTRY	
KARTA PRZEDMIOTU	
Name of subject in Polish	Izolacja i identyfikacja bioproduktów
Name of subject in English	Isolation and identification of bioproducts
Main field of study (if applicable):	Biosciences
Specialization (if applicable):	Medicinal Chemistry
Profile:	academic
Level and form of studies:	2nd level
Kind of subject:	obligatory
Subject code	W03BSS-SM2016L
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)			50		
Form of crediting (Examination / crediting with grade)			Crediting with grade		
For group of courses mark (X) final course					
Number of ECTS points			2		
including number of ECTS points for practical classes (P)			2		
including number of ECTS points corresponding to classes that require direct participation of lecturers and other academics (BU)			1,4		

*delete as not necessary

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Knowledge of organic chemistry at the university level.
2. Knowledge of analytical chemistry at the university level.
3. Proficiency in practical work in an organic chemistry laboratory.
4. Familiarity with basic techniques for identifying chemical compounds in mixtures.

SUBJECT OBJECTIVES

- C1 Familiarization with the classification of chromatographic methods.
- C2 Familiarization with the operation and software of gas chromatography.
- C3 Understanding the impact of chromatographic experiment parameters on the separation of organic compounds.
- C4 Familiarization with issues related to qualitative and quantitative analysis.
- C5 Learning methods for identifying compounds released into the environment.
- C6 Introduction to the basics of thin-layer chromatography.

SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:

A person who has passed the subject:

PEU_W01 - knows the classification of chromatographic methods and the principles of chromatographic separation.

PEU_W02 - knows the types of applications of chromatographic techniques in various fields of science.

PEU_W03 - understands the operating principle of analytical equipment.

PEU_W04 - can plan a scientific experiment.

relating to skills:

A person who has passed the subject:

PEU_U01 - can perform analyses using analytical equipment.

PEU_U02 - can conduct a scientific experiment.

PEU_U03 - can determine the concentration of organic compounds in an unknown sample using analytical equipment.

PEU_U04 - can prepare a report from the experiment in the form of a scientific article.

Z zakresu kompetencji:

Osoba, która zaliczyła przedmiot:

PEU_K01 – uznaje znaczenie wiedzy w rozwiązaniu problemów w zakresie identyfikacji bioproduktów

PROGRAMME CONTENT - laboratory		Number of hours
La1	Overview of the curriculum and assessment methods. Safe working conditions in a chemical laboratory. Description of basic working tools. Proposal for a scientific project topic.	4
La2	Gas chromatography. Preparation of a method for the initial qualitative analysis. Impact of temperature and flow on the separation of volatile organic compounds. Qualitative analysis of a natural compound solution. Quantitative analysis. Creation of a calibration curve for a natural compound. Determination of concentration in an unknown sample.	4
La3	Implementation of a scientific project. Independent work.	4
La4	Implementation of a scientific project. Independent work.	4
La5	Implementation of a scientific project. Independent work.	4
La6	Implementation of a scientific project. Independent work.	4

La7	Implementation of a scientific project. Independent work.	4
La8	Final assessment class. Presentation of project results in the form of an article in the format of an international scientific journal.	2
	Total hours	30

TEACHING TOOLS USED

N1 Working with a computer using scientific and patent databases.
 N2 Independent experimental work in the field of chromatographic techniques.

OCENA OSIĄGNIĘCIA PRZEDMIOTOWYCH EFEKTÓW UCZENIA SIĘ

Evaluation (F – forming during semester), P – concluding (at semester end)	Learning outcomes code	Way of evaluating learning outcomes achievement
P (laboratory)	PEU_W01- PEU_W04 PEU_U01- PEU_U04, PEU_K01	Written assessment paper

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

1. J.L. Anderson *et al.* *Analytical Separation Science*, vol. 3 Wiley-VCH Verlag, Weinheim, **2015**;
2. Anonymous (University of California Davis) *Thin Layer Chromatography*, LibreTexts: https://chem.libretexts.org/Core/Analytical_Chemistry/Lab_Techniques/Thin_Layer_Chromatography; ostatnia modyfikacja: **16.02.2017**
3. Lecture 3 – Thin layer chromatography | MIT 5.301 Chemistry Laboratory Techniques, IAP **2004**; access: Massachusetts Institute of Technology OpenCourseWare - <https://www.youtube.com/watch?v=EUn2skAAjHk>
4. K. Thet, N. Woo, *Gas Chromatography*. LibreTexts; https://chem.libretexts.org/Core/Analytical_Chemistry/Instrumental_Analysis/Chromatography/Gas_Chromatography
Last modification: **13.03.2015**
5. A. Wesołowska *et al.* Comparison of chemical compositions of essential oils isolated by hydrodistillation from wild thyme (*Thymus serpyllum* L.) with use of Deryng and Clevenger apparatus. *herba polonica*, **2014**, 60(2), DOI: 10.2478/hepo-2014-0006

SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Dr inż. Daniel Strub, daniel.strub@pwr.edu.pl