


**KAPITAŁ LUDZKI**  
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez  
 Unię Europejską w ramach  
 Europejskiego Funduszu  
 Społecznego

**UNIA EUROPEJSKA**  
 EUROPEJSKI  
 FUNDUSZ SPOŁECZNY


<b>Course title</b>		<b>ECTS code</b>	
HPLC - a technique for many occasions		13.3.1219	
<b>Name of unit administrating study</b>			
null			
<b>Studies</b>			
<b>faculty</b>	<b>field of study</b>	<b>type</b>	drugiego stopnia
Wydział Chemii	Biznes chemiczny	<b>form</b>	stacjonarne
		<b>specjalty</b>	wszystkie
		<b>specialization</b>	wszystkie
Wydział Chemii	Chemia	<b>type</b>	drugiego stopnia
		<b>form</b>	stacjonarne
		<b>specjalty</b>	wszystkie
Wydział Chemii	Ochrona środowiska	<b>specialization</b>	wszystkie
		<b>type</b>	drugiego stopnia
		<b>form</b>	stacjonarne
		<b>specjalty</b>	wszystkie
		<b>specialization</b>	wszystkie
<b>Teaching staff</b>			
dr Maria Dzierżyńska; dr Ewa Wieczerek; dr Julia Witkowska			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b>	
<b>Forms of classes</b>		6	
Laboratory classes, Lecture		Classes – 45 h	
<b>The realization of activities</b>		Tutorial classes – 15 h	
classroom instruction, online classes		Students's own work – 30 h	
<b>Number of hours</b>		Total: 90 h – 6 ECTS	
Lecture: 15 hours, Laboratory classes: 45 hours			
<b>The academic cycle</b>			
2024/2025 winter semester			
<b>Type of course</b>		<b>Language of instruction</b>	
an elective course		English	
<b>Teaching methods</b>		<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>	
- conducting experiments		<b>Final evaluation</b>	
- multimedia-based lecture		- Graded credit	
		- Examination	
		<b>Assessment methods</b>	
		- written exam with open questions	
		- assignment work – completing a specific practical assignment	
		<b>The basic criteria for evaluation</b>	
		Lecture:	
		• Achievement of at least 51 % of the total number of points from the written exam.	
		Seminar:	
		• Achievement of at least 51 % of the total number of points from each of the tests.	
		Student has the rights to one retake the failed exam / test. The retaken exam / test will be considered as passed when students achieves at least 51% of the total number of points from the retaken exam / test. Points from the first term and the retake do not sum up	
<b>Method of verifying required learning outcomes</b>			
<b>Required courses and introductory requirements</b>			
A. Formal requirements			

English acquisition on the communicative level (B1)	
<b>B. Prerequisites</b> lack	
<b>Aims of education</b>	
<ul style="list-style-type: none"> <li>familiarize students with application of HPLC</li> <li>presenting HPLC techniques as a tool in analytical chemistry</li> </ul>	
<b>Course contents</b>	
<p>Topics of lecture: physicochemical fundamentals of separation on HPLC, basic terminology of HPLC, kinds of columns used in HPLC, different systems of HPLC, detectors in HPLC, modifiers of liquid phase in HPLC, gradient and isocratic mode, applications of HPLC, case studies.</p> <p>Topics of laboratory work: calibration curve build, analyzing unknown analyte, sample preparation.</p>	
<b>Bibliography of literature</b>	
<p>Literature required to pass the course:</p> <p>M. C. McMaster – HPLC: A Practical User's Guide</p> <p>M. W. Dong - HPLC and UHPLC for Practicing Scientists</p> <p>Extracurricular readings:</p> <p>S. Kromidas – Practical Problem Solving in HPLC</p> <p>D. Corradini – Handbook of HPLC</p>	
<b>The learning outcomes (for the field of study and specialization)</b>	<b>Knowledge</b>
	<b>Skills</b>
	<b>Social competence</b>
<p>Chemical Business:</p> <p>K_BChII_W01 - knows and understands in-depth complex physicochemical processes and is able to analyse their course in connection with other fields of science</p> <p>K_BChII_U01 - is able to based on the acquired knowledge, propose a solution to problems in chemistry, taking into account the economic aspect, using advanced measurement and analytical techniques</p> <p>K_BChII_U04 - is able to independently plan and perform specific research tasks in the field or in the laboratory, interpret their results working individually or in a team, assuming various roles and functions in it</p> <p>K_BChII_K01 - is willing to develop and disseminate appropriate best practices in the workplace and beyond</p> <p>Chemistry:</p> <p>K_W03 - demonstrates in-depth knowledge in the field of modern measuring techniques used in chemical analysis</p> <p>K_U01 - plans and implements chemical experiments of extended complexity</p> <p>K_K06 - undertakes research tasks consciously and responsibly, understanding the social aspects of the practical application of the acquired knowledge and skills and the responsibility related to it</p> <p>Environmental Protection:</p> <p>K_OŚII_W04 - chooses methods, techniques and research tools used in environmental protection</p> <p>K_OŚII_W09 - applies safety and hygiene principles when working independently on a test or measurement stand in a laboratory or in the field</p> <p>K_OŚII_U02 - uses advanced measurement and analytical techniques used in environmental protection</p> <p>K_OŚII_K05 - critically assesses her/his own knowledge and the knowledge of the teams in which s/he works, can critically assess the content received</p>	<p>Students are able to understand basics of HPLC, the physicochemical fundamentals of separation on chromatography column used in HPLC systems; know basic terminology used in HPLC; can recognize different column applications; can recognize different HPLC systems; can apply gradient and isocratic conditions of separation; understand different modifiers of liquid phase; application of calibration curve; understand</p> <p>Students are able to establish gradient and isocratic separation methods; build calibration curve; calculate concentration from calibration curve; read peak area; can analyze the results; can present results in coherent way.</p> <p>Students understand need for learning, inspire other for learning; cooperate in group, taking different roles; exhibit creativity in determination of priorities necessary for realization of different tasks; understand social aspects of practical use of knowledge and abilities as well as connected with them responsibility.</p>
<b>Contact</b>	
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