


KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez
Unię Europejską w ramach
Europejskiego Funduszu
Społecznego

UNIA EUROPEJSKA
EUROPEJSKI
FUNDUSZ SPOŁECZNY


Course title		ECTS code	
Monographic lecture - Computational nanomedicine and nanotechnology		13.3.1317	
Name of unit administrating study			
null			
Studies			
faculty	field of study	type	drugiego stopnia
Wydział Chemii	Chemia	form	stacjonarne
		specjalty	Digital Chemistry
		specialization	wszystkie
Teaching staff			
prof. dr hab. Tomasz Puzyn			
Forms of classes, the realization and number of hours		ECTS credits	
Forms of classes		3	
Lecture		classes – 30 h	
The realization of activities		student's own work – 25 h	
classroom instruction		tutorial classes – 20 h	
Number of hours		TOTAL: 75 h – 3 ECTS	
Lecture: 30 hours			
The academic cycle			
2024/2025 summer semester			
Type of course		Language of instruction	
obligatory		English	
Teaching methods		Form and method of assessment and basic criteria for evaluation or examination requirements	
- discussion		Final evaluation	
- multimedia-based lecture		Graded credit	
		Assessment methods	
		Lecture – final test with multiple-choice questions	
		The basic criteria for evaluation	
		according to "Rules and regulations for studies at the University of Gdansk"	
		Lectures: passing the final test in the form of a multiple-choice question test (a score of 50% or more required to pass the exam).	
Method of verifying required learning outcomes			
Required courses and introductory requirements			
A. Formal requirements			
None			
B. Prerequisites			
None			
Aims of education			
Knowledge on computational methods to be applied in nanotechnology and nanotoxicology.			
Course contents			
Nanoparticles and nanomaterials. Experimental and computational characterization of nanoparticles. Modeling adsorption, distribution, metabolism / transformation, and excretion of nanoparticles in a living organism. Computational methods for supporting the design of nanoparticles used in medicine. In silico toxicity testing of nanoparticles.			
Bibliography of literature			

<p>Literature required to pass the course</p> <p>T. Puzyn, J. Leszczynski (Eds): Towards Efficient Designing of Safe Nanomaterials, RSC Publishing, Cambridge 2012.</p> <p>A. Gajewicz, T. Puzyn (Eds): Computational Nanotoxicology: Challenges and Perspectives, Jenny Stanford Publishin, 2020.</p> <p>Extracurricular readings</p> <p>Research articles published in the following journals:</p> <p>ACS Nano</p> <p>Nature Nanotechnology</p> <p>Nanoscale</p> <p>Small</p> <p>Nanotoxicology</p> <p>Nanomedicine: Nanotechnology, Biology and Medicine</p> <p>Journal of Nanotoxicology and Nanomedicine</p>	
<p>The learning outcomes (for the field of study and specialization)</p> <p>K_W06: applies mathematics to the extent necessary to understand, describe and model chemical processes of extended complexity</p> <p>K_U01: plans and implements chemical experiments of extended complexity</p> <p>K_U02: critically assesses the results of conducted, performed observations and theoretical calculations and discusses errors</p> <p>K_U03: finds necessary information in specialist literature, databases and other sources, lists basic scientific journals in chemistry</p> <p>K_K01: knows the limitations of her/his own knowledge; understands the need for further education and can inspire other people to do so</p> <p>K_K04: correctly identifies and resolves dilemmas related to the profession of a chemist</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>Knowledge</p> <p>The student knows the possibilities and limitations of computational methods utilized in nanomedicine and nanotoxicology.</p>
	<p>Skills</p> <p>The student:</p> <p>provides examples of computational methods used for designing medicine nanoparticles,</p> <p>proposed (selects) appropriate computational methods to be used for solving the problem.</p>
	<p>Social competence</p> <p>The student:</p> <p>understands risks and benefits related to the use of nanomaterials in medicine;</p> <p>formulates his/her opinions based on a solid scientific background.</p>
<p>Contact</p> <p>tomasz.puzyn@ug.edu.pl</p>	