


**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>	
Monographic lecture - Computational nanomedicine and nanotechnology		13.3.1317	
<b>Name of unit administrating study</b>			
null			
<b>Studies</b>			
<b>faculty</b>	<b>field of study</b>	<b>type</b>	second tier studies (MA)
Faculty of Chemistry	Chemistry	<b>form</b>	full-time
		<b>specialty</b>	all
		<b>specialization</b>	all
<b>Teaching staff</b>			
prof. dr hab. Tomasz Puzyn			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b>	
<b>Forms of classes</b>		3	
Lecture		classes – 30 h	
<b>The realization of activities</b>		student's own work – 25 h	
classroom instruction		tutorial classes – 20 h	
<b>Number of hours</b>		TOTAL: 75 h – 3 ECTS	
Lecture: 30 hours			
<b>The academic cycle</b>			
2023/2024 summer semester			
<b>Type of course</b>		<b>Language of instruction</b>	
obligatory		english	
<b>Teaching methods</b>		<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>	
- discussion		<b>Final evaluation</b>	
- multimedia-based lecture		Graded credit	
		<b>Assessment methods</b>	
		Lecture – final test with multiple-choice questions	
		<b>The basic criteria for evaluation</b>	
		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).	
<b>Method of verifying required learning outcomes</b>			
Written exam test (K_W06, K_U01, K_U02).			
Discussion with the students (K_U02, K_U03).			
The student identifies the level of their knowledge and skills as well as the need for updating knowledge, continuous professional training, and personal development. (K_K01, K_K04, K_K06).			
<b>Required courses and introductory requirements</b>			
<b>A. Formal requirements</b>			
None			
<b>B. Prerequisites</b>			
None			
<b>Aims of education</b>			
Knowledge on computational methods to be applied in nanotechnology and nanotoxicology.			
<b>Course contents</b>			

<p>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.</p>	
<p><b>Bibliography of literature</b></p> <p>Literature required to pass the course                  T. Puzyn, J. Leszczynski (Eds): Towards Efficient Designing of Safe Nanomaterials, RSC Publishing, Cambridge 2012.                  A. Gajewicz, T. Puzyn (Eds): Computational Nanotoxicology: Challenges and Perspectives, Jenny Stanford Publishin, 2020.</p> <p>Extracurricular readings                  Research articles published in the following journals:                  ACS Nano                  Nature Nanotechnology                  Nanoscale                  Small                  Nanotoxicology                  Nanomedicine: Nanotechnology, Biology and Medicine                  Journal of Nanotoxicology and Nanomedicine</p>	
<p><b>The learning outcomes (for the field of study and specialization)</b></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><b>Knowledge</b></p> <p>The student knows the possibilities and limitations of computational methods utilized in nanomedicine and nanotoxicology.</p>
	<p><b>Skills</b></p> <p>The student:                  provides examples of computational methods used for designing medicine nanoparticles,                  proposed (selects) appropriate computational methods to be used for solving the problem.</p>
	<p><b>Social competence</b></p> <p>The student:                  understands risks and benefits related to the use of nanomaterials in medicine;                  formulates his/her opinions based on a solid scientific background.</p>
<p><b>Contact</b></p> <p>tomasz.puzyn@ug.edu.pl</p>	