University of Gdańsk

Subject card

Subject name and code	What does nanotechnology offer?, PG_00132885		
Field of study	Archaeology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	undergraduate studies	Subject group	
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	2.0
Learning profile	academic	Assessment form	
Conducting unit			
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. Elżbieta Kamysz	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	2.0	18.0	50

Subject objectives

The aim of the course is to familiarize students with the types of nanoparticles, methods of obtaining them and the possibilities of using nanomaterials in medicine and selected industries, as well as to draw attention to possible threats to human and animal health or the environment.

Learning outcomes

Course outcome	Subject outcome	Method of verification
	Knowledge - Student: • recognizes the types of nanoparticles and knows the methods of obtaining them; • can discuss about nanomaterials used in medicine and various industries; • indicates the risks that may arise from the use of nanomaterials. Skills - Student: • discusses issues related to the content of the lecture program in a correct and understandable manner, both orally and in writing; • makes a synthesis of data from various sources and draws appropriate conclusions on the possibility of using nanomaterials. Social competences - Student: • understands the need to independently search for information in scientific literature and popular science magazines; • understands the need to verify sources of scientific information; • knows the limitations of his own knowledge and understands the need for constant learning and development, and is open to new ideas.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report [SW3] text preparation/written work [SW5] implementation of a problem task [SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report [SU3] text preparation/written work [SU4] test/exam - oral or written [SU5] implementation of a problem task [SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report [SK3] text preparation/written work [SK4] test/exam - oral or written

<table>
<tr><td>Subject contents</td><td>• Types and properties of nanoparticles.
• Methods of obtaining nanostructures.
• The use of microorganisms to obtain nanomaterials.
• Biocompatibility testing of nanomaterials.
• Examples of nanomaterials used in medicine (e.g. nanotechnology in tissue engineering and implantology, nanoparticles as drug carriers), agri-food industry (e.g. biosensors for identification of food adulterations, coatings covering the interior of household appliances to protect food against undesirable microorganisms, detection pathogenic microorganisms), cosmetics industry (e.g. cosmetics containing nanoparticles of substances protecting against UV radiation, nanoparticles as carriers of active substances), chemical industry and environmental protection, and nanomaterials still at the stage of scientific research.
• Threats from nanomaterials.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>test (open and closed questions) covering issues presented during the lecture</td><td>51.0%</td><td>45.0%</td></tr>
<tr><td>oral presentation (preferred form) or essay (up to 2,500 words)</td><td>75.0%</td><td>55.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>1. Publikacje naukowe i źródła internetowe wskazane na zajęciach przez prowadzącego;</td></tr>
<tr><td>Supplementary literature</td><td>1. Swiat nanocząstek, red. K. Kurzydłowski, M. Lewandowska, W. Łojkowski, A. Świderska-Środa, PWN, 2016;
2. Nanotechnologia w chemii i medycynie, Żelechowska, Wydawnictwo Politechniki Gdańskiej, Gdańsk, 2014;
3. Nanobioinżynieria w praktyce wybrane zagadnienia, red. Nawrotka, Wydawnictwo Uczelniane Zachodniopomorskiego Uniwersytetu Technologicznego w Szczecinie, Szczecin, 2021;
4. Biochemia, Stryer, Wydawnictwo Naukowe PWN, Warszawa.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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