



Subject card

Subject name and code	Safety in Nanotechnology, PG_00037200						
Field of study	Nanotechnology						
Date of commencement of studies	October 2021		Academic year of realisation of subject		2024/2025		
Education level	first-cycle studies		Subject group		Humanistic-social subject group		
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	4		Language of instruction		Polish		
Semester of study	7		ECTS credits		1.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Materials Engineering and Bonding -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Aleksandra Mielewczyk-Gryń				
	Teachers		dr hab. inż. Aleksandra Mielewczyk-Gryń				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15		1.0		9.0	25
Subject objectives	The aim of this course is a gaining of knowledge on possible hazards at the production of nanomaterials or work in an environment containing nanomaterials, and countermeasures decreasing or eliminating such hazards.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_U10		It can predict and assess potential negative biological and ecological impacts of producing nanostructures on an industrial scale and their practical applications.		[SU2] Assessment of ability to analyse information		
	[K6_W71] has general knowledge in humanistic, social, economic or legal sciences		Student can understand and present the positive and negative attitudes towards nanotechnology.		[SW1] Assessment of factual knowledge		
	[K6_K71] is conscious of the need to apply knowledge from humanistic, social, economic or legal sciences in order to function in a social environment		Student understands a necessity to implement a law. He/she can characterize the law regulations towards import, manufacturing and sale of products containing nanomaterials.		[SK2] Assessment of progress of work [SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice		
Subject contents	Social audience of nanotechnology and associated hazards. The health hazards. The law and technical mens to prevent the hazards caused by an application of nanotechnology. The law regulations of European Community in area of nanotechnology. The law regulations for chemical substances. The law regulations for cosmetic products, biocides, foods and food packages, medical and therapeutical products. The safety of employees. The environment safety: protection of water, soli and air, wastes.						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Written exam		50.0%		100.0%		

Recommended reading	Basic literature	<ol style="list-style-type: none"> Łopacka J. Półtorak A.: Zagrożenia związane z wykorzystaniem nanotechnologii w produkcji opakowań do żywności w świetle badań naukowych i w opinii konsumentów. Problemy Higieny i Epidemiologii 94 (2013) 172-178. Zapór L.: Bezpieczeństwo i higiena pracy a rozwój nanotechnologii. Bezpieczeństwo i Higiena Pracy, nr 2 (2012) 4-7. Nanotechnologies: a preliminary risk analysis on the basis of a workshop organized in Brussels on 12 March 2004 by the Health and Consumer Protection Directorate General of the European Commission. http://europa.eu.int/comm/health/ph_risk/events_risk_en.htm Waszkiewicz-Robak B., Świderski F.: NANOTECHNOLOGIA KORZYŚCI I ZAGROŻENIA ZDROWOTNE. Bromatologia i Chemia Toksykologiczna 16, nr 3 (2008) 202-208.
	Supplementary literature	<ol style="list-style-type: none"> Jurewicz M.: Nanotechnologia. Regulacje prawne. Legislacja Unii Europejskiej. Difin 2014. http://ec.europa.eu/polska/news/121003_nanotechnologia_pl.htm
	eResources addresses	Adresy na platformie eNauczanie: Bezpieczeństwo w Nanotechnologii 2024 - Moodle ID: 41145 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=41145
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> Health hazards Law regulations for chemical substances Law regulations for foods and food packages 	
Work placement	Not applicable	

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