GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Safety in Nanotechnology, PG_00037200		
Field of study	Nanotechnology		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2026/2027
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	Division of Ceramics -> Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor		
	Teachers		

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 the course is to familiarize students with the hazards arising from the production and application of nanomaterials, as well as the health and environmental risks associated with working in environments where nanostructures are present. Students will learn methods of risk assessment, strategies for hazard mitigation, and technical and organizational solutions applied in practice. In addition, legal regulations concerning the safety and use of nanomaterials in Poland and at the international level will be discussed.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U10	The student can correctly identify biological and ecological effects and hazards in the context of research on nanomaterials.	[SU1] Assessment of task fulfilment
[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.	[SK5] Assessment of ability to solve problems that arise in practice [SK4] Assessment of communication skills, including language correctness [SK2] Assessment of progress of work
[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

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 producs. The safety of employes. The environment safety: protection of water, soli and air, wastes.

Prerequisites and co-requisites

None

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Written exam	50.0%	100.0%

Recommended reading	Basic literature	1. 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. 2. Zapór L.: Bezpieczeństwo i higiena pracy a rozwój nanotechnologii. Bezpieczeństwo i Higiena Pracy, nr 2 (2012) 4-7. 3. 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 4. Waszkiewicz-Robak B., Świderski F.: NANOTECHNOLOGIA KORZYŚCI I ZAGROŻENIA ZDROWOTNE. Bromatologia i Chemia Toksykologiczna 16, nr 3 (2008) 202-208.
	Supplementary literature	1. Jurewicz M.: Nanotechnologia. Regulacje prawne. Legislacja Unii Europejskiej. Difin 2014. 2. http://ec.europa.eu/polska/news/121003_nanotechnologia_pl.htm
	eResources addresses	
Example issues/ example questions/ tasks being completed	1. Health hazards in work with nanomaterials 2. Law regulations for chemical substances 3. Law regulations for foods and food packages	
Work placement	Not applicable	

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