GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Nanotechnology and human environment, PG_00070929		
Field of study	Nanotechnology		
Date of commencement of studies	February 2027	Academic year of realisation of subject	2027/2028
Education level	second-cycle studies	Subject group	Humanistic-social subject group
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Solid State Physics -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marek Chmielewski	
	Teachers	dr inż. Marek Chmielewski	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	0.0	15.0	15.0	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 a general presentation of the ethical issues in the field of scientific research, in addition, during the course, allowing students to express their opinions on the ethical and humanistic subjects. Presented are current and analyzed existing codes in the area in the various fields of research.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W03] has knowledge of current development trends and the latest discoveries in the fields of physics, chemistry, technology, and applications of nanostructures	The student is familiar with various research techniques used in the field of research into structure, chemical composition, and atomic structure, which are also used in the analysis of nanomaterials and nanostructures. The student will learn about and classify physical phenomena used in the field of materials research. They will be able to determine the social significance of the development of nanotechnology.	[SW2] Assessment of knowledge contained in presentation
[K7_K03] is aware of the importance and understands the non-technical aspects and consequences of engineering activity, including its impact on the environment, and the responsibility associated with decisions taken	The student analyzes the impact of technological development and new scientific content on the natural environment and is able to determine the scope of safe use of advanced technical solutions. They are able to assess the importance of maintaining balance in technological progress.	[SK2] Assessment of progress of work
[K7_W07] has extended knowledge of the effects of using nanostructures in biological, environmental, social, economic, and legal dimensions, as well as in a broad non-technical context. Also has extended knowledge of the basics of entrepreneurship, quality management, or safety related to the application of nanomaterials	The student is aware of the consequences of irresponsible conduct in scientific research. They understand the need to comply with standards and laws governing research in the field of nanotechnology. They understand the need to present their research results accurately. They are able to effectively implement the results of their scientific work. They are familiar with the scope of safe use of nanotechnology.	[SW1] Assessment of factual knowledge

<table>
<tr><td>Subject contents</td><td>Course content – project
The project involves preparing issues that can be used in the process of determining the level of knowledge about nanotechnology in society. Course participants will be tasked with creating at least three closed questions that can potentially be used in a survey testing knowledge about nanotechnology and its impact on the natural environment.
Course content – seminar
The seminar will present issues contained in ethical codes applicable in science and discuss the impact of humans on the natural environment. Issues related to threats to the human environment will be presented and ways of avoiding them will be discussed.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>not required</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>Seminar preparation</td><td>100.0%</td><td>60.0%</td></tr>
<tr><td>Preparing questions for the survey</td><td>100.0%</td><td>40.0%</td></tr>
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<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>Kodeks Etyki Pracownika Naukowego PAN Ministerstwo Nauki i Szkolnictwa Wyższego 2024;https://www.gov.pl/web/nauka/kodeks-etyki-pracownika-naukowego-polskiej-akademii-nauk

EUROPEAN COMMISSION RECOMMENDATION of 7 February 2008 on a code of conduct for responsible nanosciences and nanotechnologies research;https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32008H0345</td></tr>
<tr><td>Supplementary literature</td><td>not required</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>Human impact on the natural environment.

Technology in human hands.

The impact of nanomaterials on the natural environment.

Current trends in legal regulations in nanotechnology research.

Codes of practice in nanotechnology research.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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