

SDAŃSK UNIVERSITY 的 OF TECHNOLOGY

Subject card

Subject name and code	, PG_00052098								
Field of study	Nanotechnology								
Date of commencement of studies	October 2020		Academic year of realisation of subject			2022/2023			
Education level	first-cycle studies		Subject group			Optional subject group Subject group related to scientific research in the field of study			
Mode of study	Full-time studies		Mode of delivery			at the university			
Year of study	3		Language of instruction			Polish			
Semester of study	6		ECTS credits			3.0			
Learning profile	general academic profile		Assessmer	ssessment 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 inż. Michał Bartmański							
	Teachers		dr inż. Michał Bartmański						
			prof. dr hab. inż. Andrzej Zieliński						
			dr inż. Magdalena Jażdżewska						
			dr inż. Łukasz Pawłowski						
			dr inż Gabriel Strugała						
			di Inz. Gabriel Strugała						
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
of instruction	Number of study hours	30.0	0.0	15.0	0.0		0.0	45	
	E-learning hours inclu	uded: 0.0				I			
Learning activity and number of study hours	Learning activity	Participation in classes include plan	didactic Participation in consultation hours		Self-study		SUM		
	Number of study hours	45		5.0		25.0		75	
Subject objectives	Gainging of basic knowledge in the applications of technology in selected fields of science and engineering: medicine and cosmetology. Gaining knowledge about selected methods of obtaining and testing bionanomaterials and skills in this field. Development of skills of carry out basic methods of surface modification of bionanomaterials and the production of nanobiomaterials.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	K6_U09		The student is able to carry out processes for manufacturing surface modification of implants using nanotechnology.			[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment			
	K6_U10		The student can assess the impact of the use of nanotechnology in medicine on the living organism. The student can evaluate the impact of nanotechnology on the environment.			[SU1] Assessment of task fulfilment			
	K6_W07		The student knows the methods of manufacturing and evaluation of properties of nanomaterials used in medicine and cosmetology.			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects			

Subject contents	Nanotechnologies in technology and in everyday life.Classification and techniques for obtaining nanomaterials.Mechanical testing methods of nanomaterials.Physical methods of nanomaterials research.Chemical methods of nanomaterial testing.Nanotechnologies in orthopedics.Nanotechnologies in dentistry.Nanotechnologies in cosmetology.					
and co-requisites						
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade			
	Colloqium	56.0%	60.0%			
	Description of laboratory work	56.0%	40.0%			
Recommended reading	Basic literature	 A. Zielinski i inni, Nanotechnologie w medycynie i kosmetologii (Nanotechnology in medicine and cosmetology) Wydawnictwo Pr Gdańsk 2018. K. Żelachowska i inni, Nanotechnologia w praktyce (Nanotechnology in practice), Wydawnictwo Naukowe PWN, Warszawa 2016. R.W. Kelsall, I.W. Hamley, M. Geoghegan, Nanotechnologie (Nanotechnology), Wydawnictwo Naukowe PWN, Warszawa 2076. K. Kurzydłowski, M. Lewandowska, Nanomateriały inżynierskie konstrukcyjne i funkcjonalne (Structural and functional engineerii nanomaterials), Wydawnictwo Naukowe PWN, Warszawa 2009. K. Zelachowska, Nanotechnologia. Chemia i medycyna (Nanotechnology. Chemistry and medicine), Wydawnictwo PG, Gdańsk 2016. 				
	Supplementary literature	 E. Regis: Nanotechnologia. Narodziny nowej nauki, czyli świat cząsteczka po cząsteczce. (Nanotechnology. The new science is born: the world, molecule by molecule), Wydawnictwo Prószyński i S-ka, Warszawa 2001. N.P. Mahalik: Micromanufacturing and Nanotechnology, Springer Verlag 2006. 				
	eresources addresses	Adresy na platformie eNauczanie: Nanotechnologie w medycynie i ko st. letni 22/23 - Moodle ID: 30041 https://enauczanie.pg.edu.pl/moodl	platformie enauczanie: lologie w medycynie i kosmetologii, W, L, Nano, sem. 05, I /23 - Moodle ID: 30041 uczanie.pg.edu.pl/moodle/course/view.php?id=30041			
Example issues/ example questions/ tasks being completed	Application of nanotechnology in orthopedics. Application of nanotechnology in cosmetology. Application of nanotechnology in dentistry. Methods of biological research on nanomaterials.					
Work placement	Not applicable					