

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Computer modeling and design of nanomaterials, PG_00055528								
Field of study	Nanotechnology								
Date of commencement of studies	October 2023		Academic year of realisation of subject			2024/2025			
Education level	second-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	at the university		
Year of study	2		Language of instruction			Polish	Polish		
Semester of study	3		ECTS credits			5.0	5.0		
Learning profile	general academic profile		Assessment form			asses	assessment		
Conducting unit	Division of Magnetic Properties of Materials -> Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics								
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Marek Augustyniak						
	Teachers dr inż. Marek Augustyniak								
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	:t	Seminar	SUM	
	Number of study hours	15.0	0.0	45.0	0.0		0.0	60	
	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	60		5.0		60.0		125	
Subject objectives	Diject objectives The class is supposed to guide students in practical skills related to the computer-aided design. The choice of tools is based on the desire to provide solutions as versatile as possible. In particular, the student shall b helped with: - understanding and creating standard paper product documentation (CAD 2D)								
	 - understanding the specifics of 3D design, based on at least one of the currently popular programs (Fusion) - application of engineering simulation methods, primarily based on the FEA (free Salome pre-processor, ANSYS computing system) 								

similar program) provide the opportunity for various simulations.use methods and toolsK7_W05These classes have elements of nanotechnology (e.g. simplified modeling of a nanotube), while most of the proposed tools and methods apply to the millimeter scale and higher.[SW2] Assessment of knowled contained in presentationK7_K04The student tries to complete all tasks, including those with a higher degree of difficulty.[SK2] Assessment of progress workK7_U03The student knows the commands of CAD 2D; he/she is able to use software such as OnShape or Fusion 360, Salome, Ansys.[SU4] Assessment of ability to use methods and tools	Learning outcomes	Course outcome	Subject outcome	Method of verification				
nanotechnology (e.g., simplified modeling of a nanotucby, while easily and thigher. contained in presentation K7_K04 The student tries to complete all tasks, including those with a higher degree of difficulty. [Sk2] Assessment of progress work. K7_U03 The student tries to complete all tasks, including those with a higher degree of difficulty. [Sk2] Assessment of ability to of CAD 2D; herkins is abile to use software such as OnShape or Fusion 300, Salome, Ansys. K7_W02 These classes have elements of nanotechnology (e.g. simplified modeling of a nanotube), while model of the proposed tools and methods apply to the millimeter scale and higher. Subject contents AutoCAD or equivalent program; e.g. LibreCAD: interface basics, commands, 2D exercises. ANSYS or equivalent program: physics simulation of single parts (mechanics, heat transfer, optional electromagnetism) - comparison with analytical solutions and experiment, where possible SALOME + Calculix - free software for 3D modeling and FEM calculations OnShape - a CAD 3D software with several extensions, which currently gains on popularity on the engineering design marker Prerequisites and criteria Subject passing criteria Passing threshold Percentage of the final gra student participation intensity Recommended reading Basic literature Software manuals (PDF, online training courses) Software vith several extensions, which currently gains on popularity on the engineering design marker		K7_U06	similar program) provide the	[SU4] Assessment of ability to use methods and tools				
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ANSYS: prediction of the durability of the car towbar		Salome + Calculix: simple part vibration calculation; work with models from the GrabCAD portal						
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Work placement The acquired skills are directly applicable in industry.	Work placement	The acquired skills are directly applicable in industry.						

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