

GDAŃSK UNIVERSITY

Subject card

Subject name and code	Unconventional production and manufacturing processes (advanced manufacturing process), PG_00059490							
Field of study	Management and Production Engineering							
Date of commencement of studies	February 2023		Academic year of realisation of subject			2022/2023		
Education level	second-cycle studies		Subject group			Obligatory subject group in the field of study		
						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	1		Language of instruction			Polish		
Semester of study	1		ECTS credits			4.0		
Learning profile	general academic pro	ofile	Assessment form			assessment		
Conducting unit	Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology							
Name and surname	Subject supervisor		dr hab. inż. Jacek Tomków					
of lecturer (lecturers)	Teachers		dr hab. inż. Jacek Tomków					
			dr inż. Piotr Sender					
			mgr inż. Adrian Wolski					
			mgr inż. Anna Janeczek					
			dr inż. Michał Landowski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	:t	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0		0.0	45
	E-learning hours included: 0.0							
Learning activity and number of study hours	Learning activity	ning activity Participation in classes includ plan				Self-study		SUM
	Number of study hours	45		10.0		45.0		100
Subject objectives	Getting to know unconventional and combined methods of manufacturing machine parts, including additive methods and reverse engineering.							

IVC_UU2 (demonstrates the ability to the task is the task: to write a research paper in Polisi and a short scientific report in a foreign language on the basis of demonstrates the science of technical parameters of sciences. The student understands the influence of technical parameters of sciences and the invokation of the parameters of the student understands the influence of technical parameters of the student of technical appendix the influence of the innovative of the needs to in the environment. [Sk4] Assessment of progress of work IVC_VIO2] has extended throwledge covering key issue processes The student appendix the total technical structure (technical in termic influence of technical in attrices. The student structure is throwledge throwledge throwledge and under technical structure. Information containing technical in attrices. IVC_VIO2] has extended throwledge covering key issue processes in proteins of the student is the structure information containing technical. IVC_VIO2] has extended throwledge covering key issue processes in the structure information and ultra proteins the structure information containing technical in attrices. IVCVI Hist Massessment of factual throwledge covering key issue processes interactive information and ultra proteins technical interniting and cortequisites [Sw1] Assessment of factual	Learning outcomes	Course outcome	Subject outcome	Method of verification				
possessed knowledge from various scientific disciplines, and in the innovative implementation of engineering tasks also take into a spects. Including approximate sciences and analyses various in the innovative implementation of engineering tasks also take into aspects. Including approximate sciences and the environment. Insumation of engineering tasks also take into aspects in relations. The student analyses various is contracted to an analyse various is contracted to a spects. Including approximate and the environment. Insumation of engineering tasks also take into aspects in relations. The student analyses various is on the environment. Insumation of engineering tasks also take into aspects in relations. The student sciences in the environment. Insumation of engineering tasks also take into aspects in relations. Insumation of engineering tasks also take into aspects in relations. Insumation of engineering tasks also take into aspects in relations. Insumation of engineering tasks also take into aspects in relations. Insumation of engineering tasks also take into aspects in relations. Insumation of engineering tasks also take into aspects in relations. Insumation of engineering tasks also tasks and tasks also tasks and task		[K7_U02] demonstrates the ability to write a research paper in Polish and a short scientific report in a foreign language on the basis of	The student knows the basic parameters of selected technological processes. The student understands the influence of technical parameters on the functional features of a	[SU3] Assessment of ability to use knowledge gained from the				
expand knowledge and verify the methods of solving problems by consulting experts about non-conventional methods subdent verifies the basic information contained in articles for its usefulness in practice. The student verifies the basic information contained in articles for its usefulness in practice. The student has extended knowledge covering key issues characterizing production processes [SW1] Assessment of factual knowledge for ano-conventional method according to the expected results of the processing and the processes and the processes and the according to the expected results of the processing and the processes and the according to the expected results of the processing and the processes and the according to the expected results of the processing and the processes and the according to the expected results of the processing and the processes and the according to the expected results of the processing and the processes and the according to the expected results of the processing and the processes and the according to the expected results of the processing and the processes and the according to the expected results of the processing and the processes and the according to the expected results of the processing and the processes and the according to the according to the according to the activity, we EDM. Lasses are ad electon beam machining, surface treatment and surfacing, advanced pasitic working, WEDM. Prerequisites and criteria Basic of manufacturing techniques Execute treatment plasma treatment and surfacing, advanced plastic working, WEDM. Recommended reading Basic literature 60.0% 40.0% 8. Subject passing criteria Passing threshold Percentage of the final grade tactorin the way bases 2007. <td< td=""><td></td><td>possessed knowledge from various scientific disciplines, and in the innovative implementation of engineering tasks also take into account system and non-technical</td><td>manufacturing method and its non- technical aspects in relation to various technical applications. The student analyses various manufacturing methods in terms of their non-technical influences</td><td colspan="2">communication skills, including</td></td<>		possessed knowledge from various scientific disciplines, and in the innovative implementation of engineering tasks also take into account system and non-technical	manufacturing method and its non- technical aspects in relation to various technical applications. The student analyses various manufacturing methods in terms of their non-technical influences	communication skills, including				
knowledge covering key issues characterizing production processes knowledge of non-conventional manufacturing methods. The student selects a manufacturing method according to the expected results of the processing and the processed material. knowledge Subject contents Lecture Introduction, Systematics of modern manufacturing technologies. Incremental technologies, HSC/ HSM machining. Characteristics of HSC/HSM, Dry machining, Precision and ultra-precision machining. Machining centres, structure, principies of creation, equipment, chargeable machining, water jet and abrasive blasting, abrasive blasting. Micromachining, surface treatment. Water jet machining, witer jet and abrasive blasting, abrasive blasting. Micromachining, surface treatment. Water jet and shrasive blasting, observe blasting. Micromachining, theoratory Exercises Incremental technologies, general knowledge, device programming using Stereolthography as an example, principles of supporting component design, postprocessing data format and model resolution, reverse engineering and object analysis, parameterisation of typical components laser surface treatment plasma treatment and surfacing, advanced plastic working, WEDM. Prerequisites and correquisites Subject passing criteria Passing threshold Percentage of the final grade Laboratory report 60.0% 60.0% 60.0% 0.0% 20.0% 20.0% 20.0% 20.0% 20.0% 20.0% 20.0% 20.0% 20.0% 20.0% 20.0% 20.0% 20.0% 20.0% 20.0% 20.0% 20.0% 20.0%		expand knowledge and verify the methods of solving problems by	about non-conventional methods from scientific articles. The student verifies the basic information contained in articles					
HSM machining. Characteristics of HSC/HSM, Dry machining. Precision and ultra-precision machining, willing, etching. Electrochemical machining, electro-discharge machining, willing, etching. Electrochemical machining, electro-discharge machining, witer jet and abrasive blasting, abrasive blasting, Micromachining, Laboratory Exercises Incremental technologies, general knowledge, device programming using Stereolithography as an example, principles of supporting component design, postprocessing data format and model resolution, reverse engineering and object analysis, parameterisation of typical components laser surface treatment Water jet machining, water jet and abrasive blasting. Micromachining, the reverse engineering and object analysis, parameterisation of typical components laser surface treatment plasma treatment and surfacing, advanced plastic working, WEDM. Prerequisites Basic of manufacturing techniques Assessment methods and criteria Subject passing criteria Passing threshold Percentage of the final grade laboratory report Basic literature 1. Katapian S. Manufacturing Engineering and Technology Pearson Education Inc. Upper Saddle River, New Jersey 2006. 2. Occos k. E.: Ksztaltowanie materialow skoncentrowanymi strumeniami energii. Wyd. Pol. Rzeszowskiej. Rzeszów 1988. Supplementary literature Supplementary literature 3. Early Direchnika Wrocławska 2007, 4. Beer P. Niekonwenicon-dciema podstawy i zastosowania. Politechnika Wrocławska 2007, 4. Beer P. Niekonwenicon-dciema podstawy i zastosowania. Politechnika Wrocławska 2007, 4. Beer P. Niekonwenicon ad clima podstawy i zastosowania. Politechnika Wrocławska 2007, 4. Beer P. Niekonwenicon ad clima podstawy i zastosowania, Politechnika Wrocławska 2007, 4. Beer P. Niekonwenic		knowledge covering key issues characterizing production	knowledge of non-conventional manufacturing methods. The student selects a manufacturing method according to the expected results of the processing and the					
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Example issues/ example questions/ tasks being completed		International Journal of Advanced Technology in Mechanical, Mechatronics and Material, The International Journal of Engineeri and Advanced Technology, The International Journal of Advanced						
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