

§ GDAŃSK UNIVERSITY § OF TECHNOLOGY

Subject card

Subject name and code	Computer Aided Manufacturing Systems, PG_00054486							
Field of study	Mechanical and Med	ical Engineerin	g					
Date of commencement of studies	February 2023		Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies		Subject group					
Mode of study	Full-time studies		Mode of delivery			at the university		
Year of study	2		Language of instruction			English		
Semester of study	3		ECTS credits			2.0		
Learning profile	general academic profile		Assessment form			assessment		
Conducting unit	Department of Manufacturing and Production Engineering -> Faculty of Mechanical Engineering and Ship Technology							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Mariusz Deja					
	Teachers	Angelos Markopoulos						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	:t	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0		0.0	30
	E-learning hours inclu	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		tudy	SUM
	Number of study hours	30		0.0		0.0		30
Subject objectives	Getting acquainted with the subject of computer-aided manufacturing as well as with the tendencies in modern manufacturing							
Learning outcomes	Course outcome		Subject outcome			Method of verification		
	[K7_K81] is able to cooperate in international team at her/his own university, during work placement and during study abroad							
	[K7_U81] is able to communicate with ease in foreign language at B2+ level of the Common European Framework of Reference for Languages (CEFR) in everyday life, in academic and professional environments							
	[K7_U08] He/she can formulate and verify hypotheses for simple engineering problems and research							
	[K7_W81] has knowledge of complex grammatical structures and diverse lexical resources needed to communicate in foreign language in terms of general and specialist language related to field of study							
	[K7_W03] He/she knows methods, techniques and tools applied to solve engineering problems in the scope of the field of study of mechanical-medical engineering							
			Ability to communicate in a foreign language			[SK4] Assessment of communication skills, including language correctness		

Cooper Contents	Subject contents			1				
and co-requisites Subject passing criteria Pessing threshold Percentage of the final grade Colloquium 50.0% 50.0% 50.0% Recommended reading Basic literature 50.0% 50.0% Recommended reading Basic literature 1. Karkatos, N.E., Markopoulos, A.P.A, B.O.CAM: principles, practice and uniterational Publishing. 1. Markatos, N.E., Markopoulos, A.P.A, B.C.CAM: principles, practice and thermational Publishing Co., Inc. Recommended reading Basic literature 1. Karkatos, N.E., Markopoulos, A.P.A, B.C.CAM: principles, practice and thermation of manufacturing processes: international research and development. Springer Science 8, Business Media. Recommended reading Basic literature 1. Karkatos, N.E., Markopoulos, A.P.A, B.C.MA: Science A, Busiches A, Belan, P. (2003). Process planning: research and development. Springer Science 8, Busicines Media. Recommended reading 1. Recommended reading 1. Recommended reading and optimization of manufacturing Drocesses: International Publishing Co., Inc. Basic literature 1. Recommended reading and point and development. Springer Science 8, Busice 8, Bealinger Healthough Co., Comp. H. & Jean Science 8, Busice 8, Bealinger Healthough Co., Comp. H. & Jean Science 8, Busice 8, Bealinger Healthough Co., Comp. H. & Jean Science 8, Busice 8, Bealinger 1, Totakato 1, Comp. H. & Jean Science 8, Busice 8, Bealinger 1, Totakato 1, K. & Jean K. & Jean Science 8, Busice 8, Bealinger 2, Comp. H. & Jean Science 8, Busice 8, Coll 1, Comp. H. & Jean Science 8, Busi		System classification. Flexible Manufacturing. Group Technology. Cell formation.Extra clustering algorithms. FMS control introduction. Petri nets fundamentals. CIM Concepts - information integration. Machine tool metrology. Robots in Manufacturing. Trends in the development of computer-aided manufacturing: STEP NC, cyber-physical manufacturing, digital twin in manufacturing. Intelligent manufacturing methods: smart manufacturing, Industry 4.0-based manufacturing systems, feature-based process planning. IoT - Internet of Things. Industrial Internet of Things - Cybermanufacturing Systems. Application Reverse Engineering						
and criteria Colloquium So 0% So 0% Recommended reading Basic literature 50.0% So 0% So 0% Recommended reading Basic literature 1. Karkatos, N. E., Markopoulos, A. P., & Davim, J. P. (2019). Computational Publishing. 2. MoMahon, C., & Browne, J. (1999). CADCAM: photoges, practice and marulacturing management. Addison-Wesley Longman Publishing Co., Inc. 3. Roo, K. V. (2010). Advanced modeling and optimization of normalization publishing. 3. Roo, K. V. (2010). Advanced modeling and optimization of and marulacturing management. Addison-Wesley Longman Publishing Co., Inc. 3. Roo, K. V. (2010). Advanced modeling and optimization of international Publishing. 5. Chol, B. K., & Jerard, R. B. (2012). Sculptured surface machining: theory and applications. Springer Solence & Business Media. 4. Scalan, P. (2003). Process planning the englymanufacture interface. Elsevior. 5. Chol, B. K., & Jerard, R. B. (2012). Sculptured surface machining: theory and applications. Springer Selence & Business Media. 6. Reward, D. B. Brecher, C. Song, H. & Jesching theory and applications. Springer Selence & Business Media. 6. Reward, N. & Schingkreux, M. (2019). Application of theory and applications. Springer Selence & Business Media. 7. Optimetion of Manufacturing Systems. 7. Computer Selence & Business Media. 7. Springer 8. Depletion of Manufacturing Systems. 7. Springer 7. Daplaston of Rapid Protopying techotaply theory and applica	•	Technical drawing, manufacturing techniques, basics of cutting technologies, Computer Aided Design CAD						
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Example issues/ • Development of CAD/CAM systems. • Machine tool selections with high level of automation. • Parts grouping. • Modelling of manufacturing processes. • Algorithms for automating the design of technological processes.	Recommended reading		 <i>Computational Methods for Application in Industry 4.0.</i> Springer International Publishing. 2. McMahon, C., & Browne, J. (1999). <i>CADCAM: principles, practice and manufacturing management.</i> Addison-Wesley Longman Publishing Co., Inc 3. Rao, R. V. (2010). <i>Advanced modeling and optimization of manufacturing processes: international research and development Springer</i> Science & Business Media. 4. Scallan, P. (2003). <i>Process planning: the design/manufacture interface.</i> Elsevier. 5. Choi, B. K., & Jerard, R. B. (2012). <i>Sculptured surface machining: theory and applications.</i> Springer Science & Business Media. 6. Rawat, D. B., Brecher, C., Song, H., & Jeschke, S. (2017). <i>Industrial Internet of Things: Cybermanufacturing Systems.</i> Springer. 7. Gunal, Murat M. (Ed.) (2019). Simulation for Industry 4.0 Past, Present, and Future Series: Springer Series in Advanced Manufacturing. 8. Przybylski, W., & Deja, M. (2007). Komputerowo wspomagane wytwarzanie maszyn. <i>Warszawa: Wydawnictwo WNT.</i> 9. Deja, M., Dobrzyński, M., & Rymkiewicz, M. (2019). Application of Reverse Engineering Technology in Part Design for Shipbuilding Industry. <i>Polish Maritime Research, 26</i>(2), 126-133. 10. Deja, M., & Siemiatkowski, M. S. (2018). Machining process sequencing and machine assignment in generative feature-based CAPP for mill-turn parts. <i>Journal of Manufacturing Systems, 48</i>, 49-62. 11. Deja, M., Dobrzyński, M., Flaszyński, P., Haras, J., & Zieliński, D. (2018). Application of rapid Prototyping technology in the manufacturing of turbine blade with small diameter holes. <i>Polish Maritime Research, 26</i>(2), 126-133. 10. Deja, M., Bobrzyński, M., Flaszyński, P., Haras, J., & Zieliński, D. (2018). Application of rapid Prototyping technology in the manufacturing of turbine blade with small diameter holes. <i>Polish Maritime Research, 25</i>(51), 119-123. 12. Deja, M., & Siemiatkowski, M. S. (2013). Feature-based generatio of machinin					
eResources addresses Adresy na platformie eNauczanie: Computer Aided Manufacturing Systems (M:320417W0) (PG_00063000) 2023-24 Summer Semester - Moodle ID: 36994 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36994 Example issues/ example questions/ tasks being completed • Development of CAD/CAM systems. • Machine tool selections with high level of automation. • Parts grouping. • Modelling of manufacturing processes. • Development trends of CAM systems: STEP NC. • Intelligent manufacturing methods, smart manufacturing. • Algorithms for automating the design of technological processes.		Supplementary interature	 Computer-Aided Design Computers in Industry Journal of Micro and Nano Manufacturing Journal of Mechanical Design 					
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Work placement Not applicable	example questions/	 Machine tool selections with high level of automation. Parts grouping. Modelling of manufacturing processes. Development trends of CAM systems: STEP NC. Intelligent manufacturing methods, smart manufacturing. 						
	Work placement	Not applicable						