GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Computer Aided Machine Design and Manufacturing, PG_00060425		
Field of study	Transport and Logistics		
Date of commencement of studies	February 2022	Academic year of realisation of subject	2022/2023
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	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

E-learning hours included: 0.0

Computer Aided Machine Design and Manufacturing (PG_00060425) - Moodle ID: 30435
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=30435

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	0.0	0.0	30

Subject objectives

Acquainting with the subject of computer-aided manufacturing and development trends in modern manufacturing and design

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W08] The student has a structured and extended knowledge of automation, control, management and energy efficiency in transport systems	Orientation in the means of production automation, taking into account the energy efficiency of transport equipment in production systems	[SW1] Assessment of factual knowledge
[K7_U03] The student is able to make a detailed analysis of the results obtained, and to develop them in the form of a technical report or presentation, also in English	Ability to analyze and present data and create an appropriate technical report, also in English	[SU4] Assessment of ability to use methods and tools
[K7_U01] The student can obtain information from literature, databases and other, properly selected sources, also in English; is able to integrate the obtained information, interpret it, as well as draw conclusions and formulate and justify opinions	Ability to obtain information from current literature sources and their critical analysis	[SU2] Assessment of ability to analyse information

Subject contents

Emergence of multitasking machining systems, applications and best selection practices. Manufacturing 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.

Prerequisites and co-requisites

Technical drawing, manufacturing techniques, basics of cutting technologies, Computer Aided Design CAD

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written or oral evaluation	60.0%	100.0%

Recommended reading	Basic literature	

1. Karkalos, N. E., Markopoulos, A. P., & Davim, J. P. (2019). Computational Methods for Application in Industry 4.0. Springer International Publishing.

2. McMahon, C., & Browne, J. (1999). CADCAM: principles, practice and manufacturing management. Addison-Wesley Longman Publishing Co., Inc..

3. Rao, R. V. (2010). Advanced modeling and optimization of manufacturing processes: international research and development. Springer Science & Business Media.

4. Scallan, P. (2003). Process planning: the design/manufacture interface. Elsevier.

5. Choi, B. K., & Jerard, R. B. (2012). Sculptured surface machining: theory and applications. Springer Science & Business Media.

6. Rawat, D. B., Brecher, C., Song, H., & Jeschke, S. (2017). Industrial Internet of Things: Cybermanufacturing Systems.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. Warszawa: Wydawnictwo WNT.

9. Deja, M., Dobrzyński, M., & Rymkiewicz, M. (2019). Application of Reverse Engineering Technology in Part Design for Shipbuilding Industry. Polish Maritime Research, 26(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. Journal of Manufacturing Systems, 48,49-62.

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. Polish Maritime Research, 25(s1), 119-123.

12. Deja, M., & Siemiatkowski, M. S. (2013). Feature-based generation of machining process plans for optimised parts manufacture.Journal of Intelligent Manufacturing, 24(4), 831-846.

	Supplementary literature	Selected articles from the scientific journals available on-line, e.g. : 1. Computer-Aided Design 2. Computers in Industry 3. Journal of Micro and Nano Manufacturing 4. Journal of Mechanical Design 5. Journal of Manufacturing Systems
	eResources addresses	
Example issues/ example questions/ tasks being completed	Development of CAD/CAM systems. Modelling of manufacturing processes. Parts grouping. Machine tool selections with high level of automation.	
Work placement	Not applicable	