GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	IT in production management, PG_00055257						
Field of study	Management and Production Engineering						
Date of commencement of studies	October 2022		Academic year of realisation of subject	2024/2025			
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	4.0			
Learning profile	general academic profile		Assessment form	exam			
Conducting unit	Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Stefan Dzionk				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	15.0	0.0	45
	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	45		6.0	49.0		100
Subject objectives	The aim of the course is to acquaint students with the techniques of computer support the management of production and product development.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U09] can use analytical techniques as well as computer simulation and numerical analysis methods in solving specific problems in the field of production engineering, is able to carry out simple engineering tasks related to the production of typical machine parts using widely understood techniques and computer tools, is able to select and apply appropriate methods of project planning and control courses with the use of computer aided means	The student knows the basic methods and techniques used to verify and improve management effectiveness.	[SU4] Assessment of ability to use methods and tools
	[K6_W10] has basic knowledge necessary to understand the economic determinants of engineering activities and economic law, to improve the work environment affecting productivity, costs and quality of work	The student has a basic knowledge of management and obtains the necessary information to complete the assignment from the professional literature.	[SW3] Assessment of knowledge contained in written work and projects
	[K6_W03] has knowledge of the design record (the record structure)for the preparation of the manufacturing process documentation and basic knowledge of the implementation and management of production systems, including the principles of designing machine parts and manufacturing technologies using information techniques	The student knows basic IT systems used in an enterprise to support management and product development. The student knows the capabilities of basic management systems and how to apply them in an enterprise.	[SW1] Assessment of factual knowledge
	[K6_U03] is able to communicate using various techniques in the professional environment and other environments, has language skills enabling free communication in the field of technical sciences related thematically to management and production engineering	The student solves simple production management tasks by exchanging information within a group.	[SU3] Assessment of ability to use knowledge gained from the subject
	[K6_K03] is aware of the social role of a graduate of a technical university, understands the importance of non-technical aspects and effects of engineering activities including their impact on the environment and responsibility for decisions, sees the need to formulate and provide the public with information and opinions on the achievements of technology, correctly identifies and resolves dilemmas associated with thejob of an engineer	The student seeks information on modern management techniques using computer systems from various application areas.	[SK5] Assessment of ability to solve problems that arise in practice

Subject contents	LECTURE The information structure of a production system. CAx systems in production engineering. Database in the enterprise. Information Base. Methods of knowledge representation and processing. Product development, rapid prototyping and rapid tooling systems in product development. Managing information and knowledge. Divalent logic and fuzzy inference. Design and object analysis facilities. Algorithms and data structures of decision-making systems for production management. Advisory systems in the preparation of production. Methods of artificial intelligence. Communication techniques in the management of the company. Application method of computerized management system. PRACTICAL EXERCISES Data analysis and criterial optimization in the decision-making tasks concerning discrete production processes (DPP) using MS Excel spreadsheet. Solving issues of production assortment and technological processes selection using the technique of linear programming in MS Excel (Solver). The use of techniques of operations research in solving transportation and resources allocation problems. Application of selected network methods (CPM, PERT) in project planing management. Construction of decision trees and the optimization of sequential decisions in the tasks of production management. Designing the structure for flow-type production systems, formalizing the technological and production data. Performing calculations for a particular discrete manufacturing production (DPP) system.
Prerequisites and co-requisites	

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Written Exam</td><td>60.0%</td><td>30.0%</td></tr>
<tr><td>Practical Exercise test</td><td>60.0%</td><td>30.0%</td></tr>
<tr><td>Project</td><td>60.0%</td><td>40.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. Anil Mital, Anoop Desai, Anand Subramanian, Aashi Mital: Product development, Butterworth-Heinemann is an inprint Elsevier, 30 Corporate Drive, Suite 400, Burlington MA 01803 USA, 2008.</td></tr>
<tr><td>Supplementary literature</td><td>1. Meyer Kutz, Mechanical Engineers' Handbook -Manufacturing and Management, John Wiley &Sons, INC, Hoboken New Jersey, 2006</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">1. Characterize the management information system,
2. Describe the basic operations of the management information systems,
3. Describe the structure of management information system,
4. Types of information flow with in the management information system
5. Characterize the RFD, DFD
6. The use of computer aided in the selection of variants of manufacturing processes and transport planning between the workstation.
7. Criteria for selection and evaluation of the operating schedule
8. Describe what are the techniques of Rapid Prototyping (RP / RT).
9. Types of models and prototypes, replace and characterize,
10. The main phase of modelling,
11. Method to characterize and define the scope of its application due to the accuracy and the materials used,
12. Typical applications of RT / RT,
13. Eliminates the problems of traditional production methods,
14. Determine the range of the necessity of the construction of models in a variety of technical applications,
15. Areas of application of artificial intelligence,
16. Characterize expert systems,
17. Fuzzy logic-applications in the management,
18. Artificial neural networks in process control and management,
19. Assumptions information management systems,
20. Characterize and mention management information system design methods,
21. The effectiveness of the implementation of the management information system.
22. Discuss the product life cycle, and trends in the development of global enterprises.
23. Characterize the CAx systems, in particular to discuss systems: PPC, CAE, CAP, CAPP, CAM, CAQ, EDM / PDM, TDM, CIM.
24. Present development trends in the CAx systems.</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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