GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Management in Industry 4.0, PG_00071184						
Field of study							
Date of commencement of studies	February 2027		Academic year of realisation of subject	2026/2027			
Education level	second-cycle studies		Subject group				
Mode of study	Part-time studies		Mode of delivery	at the university			
Year of study	1		Language of instruction	Polish			
Semester of study	1		ECTS credits	1.0			
Learning profile	general academic profile		Assessment form	assessment			
Conducting unit	Department of Polymer Technology -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Maciej Sienkiewicz				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	9.0	0.0	9
	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	9		2.0	14.0	25	
Subject objectives	The aim of the course is to familiarize students with the key fillars, trends and technologies of Industry 4.0.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W07] ma wiedzę o trendach rozwojowych i najistotniejszych nowych osiągnięciach dotyczącą zagadnień związanych z technologią materiałową i recyklingiem	The student knows and is able to characterize trends in Industry 4.0 management in relation to technical, human and ethical aspects.	[SW1] Assessment of factual knowledge
[K7_K71] is able to explain the need to apply knowledge from humanistic, social, economic or legal sciences in order to function in a social environment	The student is prepared to apply knowledge from the humanities, including management, to teamwork and organizational processes in industry, taking social and ethical aspects into account.	[SK2] Assessment of progress of work [SK4] Assessment of communication skills, including language correctness
[K7_U02] is able to determine directions for further development and implement a self-education process in order to improve professional competences	By analyzing current trends in management in Industry 4.0, the student is able to indicate areas in which it is necessary to expand his/her own knowledge and implement the process of self-education.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information
[K7_K03] is aware of the non-technical aspects and effects of the Master of Science in Chemical Engineering's activities, including the impact on the environment, and is aware of the responsibility for the decisions made, the observance and development of the principles of professional ethics and actions to ensure compliance with these principles	The student is aware of non-technical aspects of the technology industry in the context of its impact on people and the environment. The student is aware of the responsibility for the decisions they make and the possible consequences of these decisions.	[SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice
[K7_W03] has extended and in-depth knowledge of mathematics, physics, chemistry and other areas, useful for formulating and solving complex tasks in materials technology and their recycling	The student has advanced knowledge to characterize the supporting technologies used in Industry 4.0, including the area related to the production and recycling of materials.	[SW1] Assessment of factual knowledge
[K7_U71] is able to apply knowledge from humanistic, social, economic or legal sciences in order to solve problems	The student is able to use knowledge from the humanities (including management) to solve problems occurring at work in industry.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information

Subject contents

Course content – project

- Introduction to Industry 4.0: The History of Industrial Revolutions, Definition, and Pillars of Industry 4.0
- Enabling Technologies: Internet of Things (IoT) and Cyber-Physical Systems (CPS), Artificial Intelligence (AI) and Machine Learning for Production Optimization, Digital Twins, 3D Printing (Additive Manufacturing), and Collaborative Robotics (Cobots).
- Data Management and Security
- Logistics 4.0
- Business Models
- Human and Ethical Aspects

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
lecture (written test)	60.0%	100.0%

Recommended reading

Basic literature	• Kaźmierczak, J., Michna, A. (red.), 2020, Przemysł 4.0 w organizacjach. Wyzwania i szanse dla mikro, małych i średnich przedsiębiorstw, Warszawa • Stawiarska, E., Szwajca, D., Matusek, M., Wolniak, R., 2020, Wdrażanie rozwiązań Przemysłu 4.0, CeDeWu
Supplementary literature	• Łobaziewicz, M., Zarządzanie inteligentnym przedsiębiorstwem w dobie przemysłu 4.0, Tonik, Toruń
eResources addresses	

Example issues/ example questions/ tasks being completed

- Definition and Fillars of Industry 4.0
- Types and Characteristics of Supporting Technologies in Industry 4.0

Practical activites within the subject

Not applicable

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