Subject card

Subject name and code	Internet of Things and operational technologies, PG_00062730
Field of study	Technologies for Industry 5.0

Date of commencement of studies	October 2025	Academic year of realisation of subject	2026/2027
Education level	first-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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Division Of Electrochemistry And Surface Physical Chemistry -> Institute Of Nanotechnology And Materials Engineering -> Faculty Of Applied Physics And Mathematics -> Wydziały Politechniki Gdańskiej

Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Jacek Ryl
	Teachers	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15	1.0	9.0	25

Subject objectives	The aim of the course is to familiarize students with the physical and systemic aspects of industry 4.0 and 5.0 technologies, allowing them to choose their diploma specialization in a more informed way. The course will be taught by many lecturers from the FTIMS and ETI faculties - specialists in the above-mentioned issues.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U06] performs analysis, exploration and cleaning of data sets, can use statistical models and machine learning models, integrate various analytical, management and data storage tools	The student is able to identify the tools needed to analyze and explore a data set, propose models for solving analytical problems, and knows the development trends in data engineering.	[SU3] Assessment of ability to use knowledge gained from the subject
	[K6_W06] demonstrates knowledge related to data analysis and engineering, machine learning, knows the principles of integrating data with management systems to analyze complex engineering and technological problems	The student has knowledge of the development trends of Industry 5.0 technologies, in particular data engineering tools, machine learning, analysis of complex engineering problems	[SW1] Assessment of factual knowledge

Subject contents	The Importance of Intelligent Process Technologies
	Internet of Things (IoT)
	Industrial Internet of Things (IIoT)
	Data Processing and Analysis
	Sensors and Actuators in IoT
	Communication in IoT
	Platforms and Systems
	Security and Privacy
	Intelligent Energy Management Systems
	A Review of Applications in Various Industries - Examples and Case Studies

Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	exam	50.0%	100.0%

Recommended reading	Basic literature	literature recommended by individual lecturers
	Supplementary literature	nie dotyczy
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	

Work placement	Not applicable

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