GDAŃSK UNIVERSITY OF TECHNOLOGY

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 2026	Academic year of realisation of subject	2027/2028
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 -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Jacek Ryl	
	Teachers		

Lesson types

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_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
[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

<table>
<tr><td>Subject contents</td><td>Course content – lecture
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</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>exam</td><td>50.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>literature recommended by individual lecturers</td></tr><tr><td>Supplementary literature</td><td>nie dotyczy</td></tr><tr><td>eResources addresses</td><td></td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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