



Subject card

Subject name and code	Intelligent Building, PG_00069111						
Field of study	Hydrogen Technologies and Electromobility						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2026/2027		
Education level	first-cycle studies	Subject group					
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	4	Language of instruction			Polish		
Semester of study	7	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Electrical Power Engineering -> Faculty of Electrical and Control Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Krzysztof Dobrzyński					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	E-learning hours included: 0.0						
	eNauczenie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=793						
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	The aim of the course is to introduce students to the rules of designing multifunctional systems used in buildings that may feature energy storage facilities, renewable energy sources, and hydrogen installations. Students will learn the rules of designing and hardware verification of one of the leading smart building systems.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U05] can use analytical and simulation methods, prepare and for the formulation and solution of tasks in the field of hydrogen technologies, automation and robotics, electrical engineering, use various techniques to carry out engineering tasks related to electrical devices, hydrogen installations, control and robotics systems	Designs power supply systems for electrical devices. Develops operating procedures for these systems and verifies their correctness.	[SU1] Assessment of task fulfilment
	[K6_U08] can design and build systems and devices related to automation systems, mechatronics and robotics in energy storage devices and in hydrogen installations	Discusses the design and operation of selected energy storage systems, hydrogen installations, and renewable energy sources (RES) used in buildings.	[SU1] Assessment of task fulfilment
	[K6_U12] can formulate a specification of simple engineering tasks of a practical nature related to the field of study	Implementation of the design process for electrical device power supply systems.	[SU1] Assessment of task fulfilment
	[K6_K02] can work in a group taking on different roles in it	Selected project tasks are carried out in groups.	[SK2] Assessment of progress of work
	[K6_W15] he has knowledge of the construction, principles of operation and operation of electromagnetic energy converters used in transport systems and systems.	Directional effect inconsistent with the subject.	[SW1] Assessment of factual knowledge
[K6_W13] knows the properties of materials used in the field of hydrogen energy and electromobility	Directional effect inconsistent with the subject.	[SW1] Assessment of factual knowledge	
Subject contents	<p>Course content – lecture Tasks and structure of the electrical equipment control system. Main components of the system. Principles of communication between devices. Visualization of the smart building system operation. Possibilities of cooperation between smart building systems and electricity storage facilities, renewable energy sources, and hydrogen installations.</p> <p>Course content – laboratory Implementation, programming, and commissioning of a multifunctional smart building system. Verification of system errors.</p>		
Prerequisites and co-requisites	No requirements.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test	60.0%	50.0%
	zaliczenie praktyczne	60.0%	50.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. Klajn A., Bielówka M.: Instalacja elektryczna w systemie KNX/EIB. Podręcznik INPE dla elektryków, zeszyt 10, czerwiec 2006 2. Petykiewicz P.: Nowoczesna instalacja elektryczna w inteligentnym budynku, COSiW, Warszawa 2001 3. Parol M., Rokicki Ł., Instalacje i systemy w inteligentnych budynkach. Laboratorium, OWPW, 2017 Warszawa 4. Duszczyk K., Dubrawski A., Dubrawski A., Pawlik, M., Szafranski M., Inteligentny budynek. Poradnik projektanta, instalatora i użytkownika, PWN, 2019, Warszawa 5. KNX Basic Course. Home and Building Management Systems, KNX Association 6. Project Engineering for EIB Installations. Basic Principles, 1998, EIBA srl 	

	Supplementary literature	<p>1. EN 50090, Home and Building Electronic Systems (HBES)</p> <p>2. ISO/IEC 14543-3, Information technology Home electronic systems (HES) architecturePart 3-10: Amplitude modulated wireless short-packet (AMWSP) protocol optimized for energy harvesting Architecture and lower layer protocols</p> <p>3. EN 13321-1, Open data communication in building automation, controls and building management - Home and building electronic system - Part 1: Product and system requirements</p> <p>4. EN 13321-2, Open Data Communication in Building Automation, Controls and Building Management - Home and Building Electronic Systems - Part 2: KNXnet/IP Communication</p>
Example issues/ example questions/ tasks being completed	eResources addresses	In the laboratory, make, programming and start up the control installation of an electrical devices.
Practical activites within the subject	Not applicable	

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