GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Intelligent Building, PG_00038449		
Field of study	Electrical Engineering		
Date of commencement of studies	October 2025	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	3	Language of instruction	Polish
Semester of study	6	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department Of Electrical Power Engineering -> Faculty Of Electrical And Control Engineering -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Stanisław Czapp	
	Teachers		

Lesson types and methods of instruction

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

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	6.0	39.0	75

Subject objectives

The achievement of knowledge and skills in the design and commissioning of intelligent electrical installations

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W11	The student interprets topology of KNX system. Student describes the principles of design of electrical installations with KNX system. Selects devices for KNX system and describes their operation.	[SW3] Assessment of knowledge contained in written work and projects
K6_U07	The student operates the expert ETS software. Performs the project of electrical installation and starts this installation in laboratory condition.	[SU4] Assessment of ability to use methods and tools
K6_K02	The student carries out laboratory exercises in a group. Familiarizes himself with the utility program and prepares device databases. The student creates a project and runs the system.	[SK1] Assessment of group work skills [SK2] Assessment of progress of work

Subject contents

Definition of intelligent building. Types of control systems in buildings: KNX/EIB, LonWorks, VCN. European Installation Bus KNX/EIB system. The idea of the system, system elements, Sensors and actuators, graphical symbols. Topology. Devices, lines, areas. Physical address, group address. Communication in the KNX/EIB system. Data transmission, telegrams, flags, methods of the access to the bus. ETS software. Design and diagnostics. Design and performance of the KNX/EIB installation. Cables and devices. Overcurrent protection, protection against electric shock, protection against overvoltage. LABORATORY Introduction of ETS software, input data preparation. Principles project performance and starting the system. Electrical lighting switch on and switch off control. Advanced control of lighting (lighting illuminance control, time control). Windows shutter control. Temperature control. Automatic control of illuminance with presence sensor. Integration of systems for advanced topology. Visualization of the installation. Remote monitoring of the installation.

Prerequisites and co-requisites

No requirements

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Practical exercise	50.0%	50.0%
	Written exam	50.0%	50.0%
Recommended reading	Basic literature	1. Petykiewicz P.: Nowoczesna instalacja elektryczna w inteligentnym budynku. COSiW SEP 2001. 2. Mikulik J.: Europejska Magistrala Instalacyjna EIB: rozproszony system sterowania bezpieczeństwem i komfortem. Stowarzyszenie Elektryków Polskich. Centralny Ośrodek Szkolenia i Wydawnictw, Warszawa 2008.	
	Supplementary literature	1. Manual of devices of KNX/EIB system.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	On a laboratory stand - performance of the installation for lighting control (using KNX system)		
Work placement	Not applicable		

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