



## Subject card

Subject name and code	Intelligent Building, PG_00038449						
Field of study	Electrical Engineering						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2024/2025		
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						
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		