



## Subject card

Subject name and code	Smart electrical installations, PG_00053433						
Field of study	Electrical Engineering						
Date of commencement of studies	October 2020		Academic year of realisation of subject			2023/2024	
Education level	first-cycle studies		Subject group				
Mode of study	Part-time studies		Mode of delivery			at the university	
Year of study	4		Language of instruction			Polish	
Semester of study	7		ECTS credits			3.0	
Learning profile	general academic profile		Assessment form			assessment	
Conducting unit	Department of Electrical Power Engineering -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Krzysztof Dobrzyński				
	Teachers		dr inż. Krzysztof Dobrzyński				
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		4.0		41.0	75
Subject objectives	Preparation of the basic design of electrical installations in which the intelligent building system is used.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_W09	The student presents the relationships between the generation, loads and transmission of electricity in electrical installations, including those equipped with building automation.	[SW1] Assessment of factual knowledge
	K6_K05	The student analyzes and lists the requirements for protection against electric shock in low-voltage installations that occur in buildings equipped with building automation.	[SK3] Assessment of ability to organize work
	K6_K01	The student analyzes the possibilities of building automation to increase comfort, safety and efficiency of use of objects connected to the electrical installation. He is aware of the continuous development of building automation technology.	[SK1] Assessment of group work skills
	K6_U10	The student presents the procedure when designing a low-voltage electrical installation in a building equipped with a building automation system. Designs and analyzes the operation of a simple intelligent building system based on dedicated software.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
	K6_U09	The student selects the types of cables and protections in low-voltage electrical installations in buildings where building automation is used.	[SU2] Assessment of ability to analyse information
	K6_U05	The student lists the basic principles and requirements of electric shock protection applicable to low-voltage electrical installations.	[SU2] Assessment of ability to analyse information
	K6_W11	The student presents the procedure for designing a simple low-voltage electrical installation in a building with a building automation system.	[SW1] Assessment of factual knowledge
	K6_W10	The student analyzes the possibilities of building automation systems for managing electricity in buildings.	[SW1] Assessment of factual knowledge
Subject contents	Functions of building automation systems. Rules of operation of decentralized intelligent building systems on the example of the European Installation Bus KNX. Design and realization of a classic electrical installation in coordination with the KNX installation. Other building automation systems included in intelligent buildings, e.g. alarm systems. Installations of PV micro-sources as an element of Smart Grids in buildings. Rules of designing photovoltaic installations.		
Prerequisites and co-requisites	<p>Fundamentals of electrical engineering.</p> <p>Basics of designing classic electrical installations.</p>		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lab result	60.0%	50.0%
	Lecture exam	60.0%	50.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. H. Markiewicz: Electrical Installations, WNT Warszawa 1996 (and later).</li> <li>2. Electrical engineer handbook, WNT Warszawa 2011 (volume 3), 2007 (volume 2).</li> <li>3. Musiał E.: Electric power installations and devices. WSiP, Warszawa, 2008.</li> <li>4. Edited by E. Niezabitowskiej, Budynek inteligentny WPŚ Gliwice 2014, TVolume I, TVolume II</li> <li>5. P. Petykiewicz Modern electrical installation in an intelligent building. COSIW Warszawa 2001.</li> <li>6. Krzysztof Duszczuk and other. Intelligent building. A designer, installer and user guide. PWN Warszawa 2019</li> <li>7. Basic security systems in intelligent buildings. WPŚ, Gliwice 2005</li> </ol>	

	Supplementary literature	<ol style="list-style-type: none"> <li>1. N SEP-E-002 Electrical installations in buildings. Electrical installations in residential buildings. Warszawa 2006.</li> <li>2. Teaching materials, Satel Sp. z o.o.</li> <li>3. Fire-fighting installations - Edward Skiepmo (Notebooks for electricians nr 5) Medium, 2010</li> <li>4. PN-HD 60364-8-2: Low-voltage electrical installations, Part 8-2: Prosumer's low-voltage electrical installations</li> </ol>
	eResources addresses	<p>Adresy na platformie eNauczanie:</p> <p>INTELIGENTNE INSTALACJE ELEKTRYCZNE [Niestacjonarne] [2023/24] - Moodle ID: 27157</p> <p><a href="https://enauzanie.pg.edu.pl/moodle/course/view.php?id=27157">https://enauzanie.pg.edu.pl/moodle/course/view.php?id=27157</a></p>
Example issues/ example questions/ tasks being completed	Selection of the cable cross-section and protection for an exemplary lighting circuit in an electric installation cooperating with the intelligent building system.	
Work placement	Not applicable	