

FACULTY OF ELECTRICAL
ENGINEERING**SUBJECT CARD**

Name in Polish: **Inteligentne instalacje elektryczne -komputerowe projektowanie i zastosowania**
 Name in English: **Intelligent electrical installations - computer planning and applications**
 Main field of study (if applicable): **Electrical Engineering**
 Specialization (if applicable): **Electrical Power Engineering**
 Level and form of studies: **2nd level, full-time**
 Kind of subject: **optional**
 Subject code: **ELR052312**
 Group of courses: **NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU):	15			15	
Number of hours of total student workload (CNPS):	30			30	
Form of crediting:	crediting with grade			crediting with grade	
For group of courses mark (X) final course:					
Number of ECTS points:	1			1	
including number of ECTS points for practical (P) classes :				1	
including number of ECTS points for direct teacher-student contact (BK) classes:	0.70			0.70	

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. He has a basic knowledge concerning the electrical installations of municipal buildings.
2. He knows how to use basic computer hardware and software.
3. He can obtain information from literature, databases and other sources.
4. He understands the need of continuous education and knows possibilities of improving professional, personal and social competencies.

SUBJECT OBJECTIVES

- C1. Acquiring detailed knowledge in the field of topology, physical and logical structure of chosen solutions of intelligent installation systems.
- C2. Acquiring detailed knowledge in the planning and implementation of various control functions in selected building automation systems.
- C3. Getting to know of basic software tools used for configuration of selected building automation systems.
- C4. Acquiring skills in planning simple and advanced arrangements of intelligent installations in chosen building automation systems with using products of various manufacturers.
- C5. Getting to know criteria and principles of intelligent installations design on the example of chosen building automation systems.
- C6. Acquiring and strengthening social competencies concerning the selfdependence, responsibility and reliability in the proceedings, awareness of effects of engineering actions taken.
- C7. Acquiring skills in preparing the technical documentation of intelligent electrical installation.

SUBJECT LEARNING OUTCOMES*relating to knowledge:*

PEU_W01 He has a detailed knowledge in the field of the construction and operation of selected intelligent installation systems and knows the fundamental assumptions of the building automation and the system technology of intelligent installations.

PEU_W02 He has a detailed knowledge in the field of the planning and ways to implement various control functions with use of selected intelligent installation systems.

relating to skills:

PEU_U01 He can design and select the elements of an intelligent installation in chosen buildings automation systems.

PEU_U02 He is able to prepare the technical documentation of intelligent electrical installation.

relating to social competences:

PEU_K01 He is able to think and act in a creative and enterprising way.

PROGRAMME CONTENT

Form of classes - lecture		Number of hours:
Lec 1	Introduction to the course and presentation of credit conditions. General presentation of the intelligent installation systems. General characteristics of the KNX system. Topology of the KNX system. The division and construction of the bus devices and system components. The physical addresses of the individual system elements.	2
Lec 2	The logical structure of the KNX system and group addresses. Logical connections between communication objects and the address groups. Designing a KNX installation.	2
Lec 3	General characteristics of the LCN system. The internal structure of the module, system components, system topology. Division and types of system devices. The logical structure of the LCN system. Designing a LCN installation.	2
Lec 4	Examples of applications and practical implementation of basic lighting control functions in selected intelligent installation systems.	2
Lec 5	Examples of applications and practical implementation of advanced lighting control functions in selected intelligent installation systems.	2
Lec 6	Examples of applications and practical implementation of blinds/shutters and heating/temperature control functions in selected intelligent installation systems.	2
Lec 7	Examples of applications and practical implementation of complex control functions in selected intelligent installation systems.	2
Lec 8	Final colloquium.	1
Total hours:		15

Form of classes - project		Number of hours:
Proj 1	Introduction to the course. Presentation of the course credit conditions. Distribution of project tasks and discussion of their scope.	2
Proj 2	Guidelines concerning equipping the intelligent electrical installations. Devices selection, planning and designing of the various control functions on the example of chosen building automation systems.	2
Proj 3	Guidelines concerning equipping the intelligent electrical installations. Devices selection, planning and designing of the various control functions on the example of chosen building automation systems.	2
Proj 4	Guidelines concerning equipping the intelligent electrical installations. Devices selection, planning and designing of the various control functions on the example of chosen building automation systems.	2
Proj 5	Guidelines concerning equipping the intelligent electrical installations. Devices selection, planning and designing of the various control functions on the example of chosen building automation systems.	2
Proj 6	Guidelines concerning equipping the intelligent electrical installations. Devices selection, planning and designing of the various control functions on the example of chosen building automation systems.	2
Proj 7	Guidelines concerning equipping the intelligent electrical installations. Devices selection, planning and designing of the various control functions on the example of chosen building automation systems.	2
Proj 8	The content and principles for the preparation of technical project documentation in the field of intelligent electrical installations.	1
Total hours:		15

TEACHING TOOLS USED

- N1. Information lecture with use of audio-visual techniques.
- N2. A multimedia presentation.
- N3. Discussion.
- N4. Software tools to design and programming the intelligent installations.
- N5. Personal consultations.

EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT		
Evaluation <i>F – forming (during semester)</i> <i>P – concluding (at semester end)</i>	Educational effect number	Way of evaluating educational effect achievement
F1(W)	PEU_W01 PEU_W02	Colloquium
P(W)	P = F1	
F1(P)	PEU_U01	Discussion
F2(P)	PEU_U01 PEU_U02	Evaluation of the project preparation
F3(P)	PEU_U01 PEU_U02 PEU_K01	Project defence
P(P)	P = 0,2F1 + 0,3F2 + 0,5F3	

PRIMARY AND SECONDARY LITERATURE
<p>PRIMARY LITERATURE:</p> <p>[1] Markiewicz H.: Instalacje elektryczne, WNT, current edition; [2] Selected standards and regulations of subject literature; [3] Selected websites of the manufacturers of building automation systems, according to the Supervisor's recommendation;</p> <p>SECONDARY LITERATURE:</p> <p>[1] Duszczyk K., Dubrawski Andrzej, Dubrawski Albert, Pawlik M., Szafrński M.: Inteligentny budynek. Poradnik projektanta, instalatora i użytkownika, Wydawnictwo Naukowe PWN, 2019; [2] Klajn A., Bielówka M.: Instalacja elektryczna w systemie KNX/EIB, Informacje o Normach i Przepisach Elektrycznych – Miesięcznik Stowarzyszenia Elektryków Polskich, Podręcznik dla Elektryków – Zeszyt 10, Warszawa 2006;</p>

SUBJECT SUPERVISOR
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