DESCRIPTION OF THE COURSES

- Course code: ARR2304
- Course title: Intelligent installations of buildings and objects
- Language of the lecturer: Polish

Course form	Lecture	Classes	Laboratory	Project	Seminar
Number of hours/week*	2	0	0	0	0
Number of hours/semester*	30	0	0	0	0
Form of the course completion	Test				
ECTS credits					
Total Student's Workload					

- Level of the course (basic/advanced): basic
- Prerequisites: Equipment and control standards in electrical installations.
- Name, first name and degree of the lecturer/supervisor:
  Antoni Klajn dr inż.
- Names, first names and degrees of the team's members:
  Waldemar Dołęga dr inż.
  Kazimierz Herlender dr inż.
  Mirosław Kobusiński mgr inż.
  Małgorzata Bielówka mgr inż.
  Surówka Ireneusz mgr inż.
- Year:.2.............. Semester:..3.
- Type of the course (obligatory/optional): optional
- Aims of the course (effects of the course):
  Knowledge about operation principles of intelligent electrical installation, as well as its advantages in comparison with the traditional one. Information concerning the most popular systems of intelligent installations in buildings.
- Form of the teaching (traditional/e-learning): traditional
- Course description:

Basic requirements of modern electrical installation, required level of supplying reliability and comfort of the use. Traditional and intelligent electrical installation – basic concepts and differences. Intelligent building. Installations with analogue control. Installations with digital control – overview of up-to-date solutions. Installations in KNX/EIB system: characterisation of devices, topology, logical structure, commissioning, changes in programming and operation of bus devices. Tool program ETS – program structure, project development and communication between the program and installation. LCN system – topology and characterisation of bus devices. Tool program LCN-PRO – program structure, programming of bus devices and logical structure of the system. Putting the system in operation. Basic information about other, chosen systems of intelligent installations.

- Lecture:

Particular lectures contents	Number of hours

1. Up-to-date tendencies in development of electrical installations. Problem of supplying quality and comfort of use.	*2*
2.. Idea of intelligent installation and intelligent building. Intelligent installations with the analogous (relay) control on the SI-System example.	*2*
3. Intelligent installations with the digital control – an overview and characterisation of up-to-date solutions. Structure of the communication systems, OSI model.	*2*
4. Bus system. Transmission of data.	*2*
5. Installation in the KNX/EIB system – historical development and present state in context of the intelligent building concept. The role of the KONNEX Association.	*2*
6. Characterisation of the bus and system devices, topology of the KNX/EIB system.	*2*
7. Logical structure of the KNX/EIB system. Communication objects, group addresses.	*2*
8. Communication in the EIB system. Telegram – structure, coding and self-inspection.	*2*
9. Chosen aspects of the wiring of the KNX-EIB installation.	*2*
10. Establishing of the project and project design in the ETS program. Communication between the program and bus devices. Putting the installation into operation.	*2*
11. The LCN system – topology and characterisation of the bus devices.	*2*
12. Communication in the LCN system. Chosen aspects concerning wiring and installation of devices. RCD's in the LCN installation.	*2*
13. The tool program LCN-PRO. Project design and putting into operation of the installation in the LCN system.	*2*
14. Examples of chosen project tasks in the KNX/EIB as well as in the LCN systems. Comparison of advantages and disadvantages of both systems.	*2*
15 Overview of other, chosen systems of intelligent electrical installations in buildings.	*2*

- Classes – the contents:
- Seminars – the contents:
- Laboratory – the contents:
- Project – the contents:
- Basic literature:

1. Markiewicz H.: Instalacje elektryczne. WNT, Warszawa 2006.
2. Klajn A., Bielówka M.: Instalacja elektryczna w systemie KNX/EIB. Podręcznik INPE –dodatek dla prenumeratorów miesięcznika INPE, COSiW SEP, 2006.
3. Petykiewicz P.: Nowoczesna instalacja elektryczna w inteligentnym budynku. COSiW SEP, Warszawa, 2001.

- Additional literature:

1. PN-EN 50090, Home and building electronic systems (HBES) (chosen parts of the standard).

- Conditions of the course acceptance/credition: completion of the test

* - depending on a system of studies