DESCRIPTION OF THE COURSES

- Course code: ARR2313
- Course title: Intelligent installations of buildings and objects
- Language of the lecturer: Polish

Course form	***Lecture***	***Classes***	***Laboratory***	***Project***	***Seminar***
*Number of hours/week**	*1*	*0*	*1*	*0*	*0*
*Number of hours/semester**	*15*	*0*	*15*	*0*	*0*
Form of the course completion	*Test*		*Completion of laboratory exercises*		
ECTS credits					
Total Student's Workload					

- Level of the course (basic/advanced): basic
- Prerequisites: Power electrical equipment and substations
- 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):
  Know-how of operation principles of intelligent electrical installation, as well as its advantages in comparison with the traditional one. Knowledge about the most popular systems of intelligent installations in buildings.
- Form of the teaching (traditional/e-learning): traditional
- Course description:
  Basic information concerning the traditional and intelligent electrical installation. 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.
- Lecture:

Particular lectures contents	*Number of hours*

1. Basic information concerning the traditional and intelligent electrical installation. Tendencies in development of electrical installations. Idea of intelligent installation and intelligent building. Intelligent installations with the analogous (relay) control. System SI.	*2*
2. Intelligent installations with the digital control – an overview and characterisation of up-to-date solutions. Communication standards in the bus systems in buildings.	*2*
3. Installation in the KNX/EIB system – historical development and present state in context of the intelligent building concept. The KONNEX Association.	*2*
4. Characterisation of the bus and system devices, topology of the KNX/EIB system. Logical structure of the KNX/EIB system. Communication objects, group addresses.	*2*
5. The ETS tool program. Project design in the ETS program. Communication between the program and bus devices. Putting the installation into operation.	*2*
6. LCN system – topology and characterisation of the bus devices.	*2*
7. The tool program LCN-PRO. Project design and putting into operation of the installation in the LCN system.	*2*
8. Basic information about other systems of intelligent installations.	*1*

- Classes – the contents:
- Seminars – the contents:
- Laboratory – the contents:

Kontent of the laboratory exercises	*Liczba godzin*
1. Introductory and organization lecture.	*1*
2. Installation with the relais-controlled system - system SI.	*2*
3. Realisation of the design exercise in the tool programme ETS.	*2*
4. Realisation of the design exercise in the tool programme LCN.	*2*
5. Putting into operation of the installation in the KNX/EIB system and realisation of changes in realised functions.	*2*
6. Putting into operation of the installation in the LCN system and realisation of changes in realised functions.	*2*
7. Chosen, advanced functions of the system KNX/EIB	*2*
8. Chosen, advanced functions of the system LCN	*2*

- 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, Domowe i budynkowe systemy elektroniczne (Home and Buildings Electronic Systems HBES) (chosen parts of the standard).
- Conditions of the course acceptance/credition: Completion of the test and laboratory practice.

***** - depending on a system of studies