COURSE DESCRIPTION CARD - SYLLABUS

Course name
Control, management and supervision systems in buildings [S2Elenerg1-UEE>SS]

Course

Field of study
Electrical Power Engineering

Year/Semester
2/3

Area of study (specialization)
Electric Energy Exploitation

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
30

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

4,00

Coordinators

dr inż. Grzegorz Dombek
grzegorz.dombek@put.poznan.pl

Lecturers

Prerequisites

Basic knowledge of installations, electrical devices and automation. Ability to create and analyze electrical diagrams. Knowledge of the operation of installation protections and building automation components.

Course objective

Obtaining extended knowledge about control systems and management of building installations as well as the operation and application of supervision and safety systems in building facilities. Obtaining knowledge about the integration and programming of technical service systems and automatic building control.

Course-related learning outcomes

Knowledge:
student knows the operation, topology, programming principles and diagnostics of management and supervision systems in building facilities. student has knowledge of the algorithms of operation and functioning of actuators in the supervision and control systems.

Skills:
student is able to design, program and diagnose teletechnical installations as well as control,

management and supervision systems in buildings. student has the ability to integrate control systems and installation management as well as cooperate with designers of other installation systems.

Social competences:
student is aware of the principles of professional ethics when designing supervisions systems in buildings. student responsibly plans tasks respecting the rights of other designers and users of buildings.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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Lecture:
- knowledge acquired as part of the lecture is verified by a written final exam consisting of open or test questions with different points. Passing threshold: 50% of points,
- current grading in each lecture (rewarding activities).
Laboratory classes:
- current check and rewarding knowledge necessary for the accomplishment of the problems in the area of laboratory tasks,
- evaluation of reports performed on laboratory classes,
- rewarding activities related to the implementation of laboratoy classes.

Programme content

Intelligent installations in modern commercial buildings, with particular emphasis on building automation, security, fire alarm, access control and emergency power supply systems.

Course topics

Lecture:
- Quality requirements for intelligent buildings,
- Intelligent installations in modern utility buildings,
- Intelligent building automation systems - basic information, capabilities and functions based on selected building automation systems,
- Programming intelligent buildings,
- Security of intelligent buildings,
- Fire alarm systems,
- Intruder and hold-up alarm systems,
- Access control systems,
- CCTV systems,
- Evacuation sound system,
- Emergency power supply system,
- Integration of security systems.

Laboratories:
- Discussion of classes: topics, literature, requirements, reports, health and safety,
- Connecting, programming and operating the Fibaro building automation system,
- Connecting, programming and operating the BleBox building automation system,
- Connecting, programming and operating the Satel alarm system,
- Connecting, programming and operating the KNX alarm system,
- Summary of classes, reports and assessment.

Teaching methods

Lecture:
- multimedia or object-oriented presentations supported by illustrated examples presented on the board,
- interactive lecture with questions and initiating discussions.
Laboratory classes:
- object-orientedpresentations supported by illustrated examples presented on the board,
- presentations of selected experiments,
- initiating teamwork.

Bibliography

Basic
1. E. Niezabitowska, J. Sowa, Z. Staniszewski, D. Winnicka-Jasłowska, W. Badroń, A. Niezabitowski. Budynek inteligentny. Potrzeby użytkownika a standard budynku inteligentnego. Wydawnictwo Politechniki Śląskiej, Gliwice, 2000.
2. J. Mikulik. Budynek inteligentny. Podstawowe systemy bezpieczeństwa w budynkach inteligentnych. Wydawnictwo Politechniki Śląskiej, Gliwice, 2000.
3. A. Kamińska A, L. Muszyński, Z. Boruta, R. Radajewski, Nowoczesne techniki w projektowaniu energooszczędnych instalacji budynkowych w systemie KNX, POIG.02.02.00-00-018/08-00, Warszawa 2011.
Additional
1. J. Ciszewski, Wstęp do automatycznych systemów sygnalizacji pożaru, Centrum Naukowo-Badawcze Ochrony Przeciwpożarowej, Józefów, 1996.
2. Dombek, G.; Nowak, K.; Książkiewicz, A.; Bochenek, B.; Nowaczyk, P.; Pluta, P. Zastosowanie przekaźników PLC do realizacji algorytmów sterowania ogrzewaniem. Poznan University of Technology Academic Journals. Electrical Enginnering, 2017, Issue 92, pp.415-425.
3. Dombek, G.; Książkiewicz, A. Automatyka budynkowa oparta na przekaźnikach programowalnych firmy Relpol. Elektronik, 2017, nr 3, pp. 44-45.
4. Dombek, G.; Książkiewicz, A. Automatyka budynkowa w oparciu o przekaźniki PLC firmy Relpol. Elektrosystemy, 2017, nr 3, pp. 43-44.
5. Normy przedmiotowe.
6. Publikacje internetowe.

Breakdown of average student's workload

	Hours	ECTS
Total workload	110	4,00
Classes requiring direct contact with the teacher	60	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	50	2,00