COURSE DESCRIPTION CARD - SYLLABUS

Course name
Electrical load profile of urban and industrial facilities [N2Elenerg1-UEE>POE1]

Course

Field of study
Electrical Power Engineering

Year/Semester
1/2

Area of study (specialization)
Electric Energy Exploitation

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
10

Laboratory classes
10

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

Basic information on the functioning of devices constituting the technical equipment of buildings. General knowledge of the operation of installation security and building automation. Ability to analyze electrical diagrams. Basic skills in making electrical measurements.

Course objective

Expanding knowledge in the field of knowledge of the operational features of heating, ventilation and climatic devices. Obtaining extended knowledge in the field of issues related to the demand for electricity in urban and industrial facilities. Acquisition of skills necessary to implement projects in the field of general energy demand and ensuring climate conformation. Ability to assess the impact of climate, heating and ventilation receivers on the quality parameters of electricity in power circuits.

Course-related learning outcomes

Knowledge:
student has in-depth knowledge of the operating characteristics of climate, ventilation and heating receivers in municipal and industrial facilities. student knows the operation of these devices in terms of their electricity demand. student knows the areas of use of climatic, ventilation and heating devices in

industrial and urban facilities.

Skills:
student is able to determine the demand for electricity for heating, ventilation and climate devices and to design their supply and protection circuits. student has the ability to optimally select these devices in terms of their operational, environmental and economic parameters. student is able to measure the power demand of heating, climate and ventilation devices, taking into account their influence on the quality of the power supply network.

Social competences:
student is aware of the principles of professional ethics in the design of power circuits for technical equipment in buildings. student 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 test 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

The content includes a discussion of the structure of buildings and determining how to estimate the demand for various forms of energy in these buildings. Discussion of devices used in buildings in terms of their energy consumption and usefulness.

Course topics

Design issues of heating, ventilation and climate devices. Operational and non-technical requirements for heating, climate and ventilation devices. Energy consumption of technical equipment in buildings. Issues related to the demand for electricity in urban and industrial facilities. Acquisition of data on energy consumption of heating, climate and ventilation devices. Influence of heating, climate and ventilation devices on the quality of energy in receiving circuits. Elements of designing power supply for technical equipment of buildings. Designing power supply for municipal consumers in terms of the specification of their equipment.
Laboratory classes:
Classes discussing the regulations of the laboratory, topics of laboratory classes and OHS training related to the operation of laboratory positions. To perform 6 two-hour laboratory classes in the field of lecture.

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. 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.
3. Koczyk H. (red): Ogrzewnictwo praktyczne - II wydanie uzupełnione projektowanie, montaż, certyfikacja energetyczna, eksploatacja. Systherm Serwis Poznań 2009.
4. Koczyk H., Antoniewicz B.: Nowoczesne wyposażenie techniczne domu jednorodzinnego Instalacje sanitarne i grzewcze. Państwowe Wydawnictwo Rolnicze i Leśne. 2004.
5. Sroczan E.: Nowoczesne wyposażenie techniczne domu jednorodzinnego Instalacje elektryczne. Państwowe Wydawnictwo Rolnicze i Leśne. 2004.
Additional
1. Recknagel, Schramek, Sprenger, Honmann: Kompendium wiedzy OGRZEWNICTWO, KLIMATYZACJA, CIEPŁA WODA, CHŁODNICTWO 08/09 OMNI SCALA, Wrocław, 2008
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. Normy przedmiotowe.
4. Publikacje internetowe.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	20	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00