

FACULTY OF ELECTRICAL
ENGINEERING**SUBJECT CARD**

Name in Polish: **Instalacje elektryczne w obiektach energetyki**
 Name in English: **Electrical installations of power objects**
 Main field of study (if applicable): **Industrial Control Engineering**
 Specialization (if applicable): **Automation and Control in Electrical Power Systems**
 Level and form of studies: **2nd level, full-time**
 Kind of subject: **optional**
 Subject code: **APR012411**
 Group of courses: **NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU):	30	15			
Number of hours of total student workload (CNPS):	60	30			
Form of crediting:	examination	crediting with grade			
For group of courses mark (X) final course:					
Number of ECTS points:	2	1			
including number of ECTS points for practical (P) classes :		1			
including number of ECTS points for direct teacher-student contact (BK) classes:	1.40	0.70			

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Knowledge of devices and equipment.
2. Basic knowledge of electrical engineering.
3. Knowledge of the principles of construction and electrical equipment.

SUBJECT OBJECTIVES

- C1. Knowledge of the principles of construction and electrical equipment.
 C2. Understanding the principles of safe work on electrical equipment.
 C3. Knowledge of calculations of parameters of electrical installations.

SUBJECT LEARNING OUTCOMES*relating to knowledge:*

- PEU_W01 Student has knowledge of the construction electrical installations.
 PEU_W02 Student has knowledge of the protective systems used in electrical installations.
 PEU_W03 Student has knowledge of the rules and regulations for the construction of electrical installations.

relating to skills:

- PEU_U01 Student can determine the expected load in industrial and power objects.
 PEU_U02 Student can select wires and protection device.
 PEU_U03 Student can calculate the effectiveness of shock protection.

relating to social competences:

- PEU_K01 Student is able to think and act in a creative way.

PROGRAMME CONTENT

Form of classes - lecture		Number of hours:
Lec 1	Basic concepts of electrical installations.	2
Lec 2	Network systems.	2
Lec 3	Determination of the expected load in electrical installations.	2
Lec 4	Systems components and circuits, cables, connectors.	2
Lec 5	Overload and short-circuit protection for electrical installations.	2
Lec 6	Selection of wires and protection device.	2
Lec 7	Terms of selective overcurrent protection.	2
Lec 8	Voltage drops in electrical installations.	2
Lec 9	Electric shock protection by automatic disconnection of supply.	2
Lec 10	Grounding and equipotential bonding in electrical installations.	2
Lec 11	Construction of industrial electrical installations.	2
Lec 12	Power needs of its own power stations.	2
Lec 13	Electrical installations of power objects.	2
Lec 14	Fire hazard and ways of mitigation.	2
Lec 15	Lightning protection of power engineering objects.	2
Total hours:		30

Form of classes - class		Number of hours:
Cl 1	Determination of the expected loads in industrial and power plants.	2
Cl 2	Selection of cables and protection - receiver circuit design.	2
Cl 3	Calculation of voltage drop in the electrical system.	2
Cl 4	Calculation of the effectiveness electric shock protection by automatic disconnection of supply.	2
Cl 5	Construction of the installations needs its own power stations.	2
Cl 6	Design of the main and supplementary equipotential bonding.	2
Cl 7	Lightning construction of installations of energy facilities. Overvoltage protection.	2
Cl 8	Additional term and crediting.	1
Total hours:		15

TEACHING TOOLS USED

- N1. Multimedia presentation.
 N2. Informative lecture.
 N3. Calculation exercises.

EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT

Evaluation <i>F – forming (during semester) P – concluding (at semester end)</i>	Educational effect number	Way of evaluating educational effect achievement
F1(w)	PEU_W01 PEU_W02 PEU_W03	Exam
P(w)	P=F1	
F1(c)	PEU_U01 PEU_U02 PEU_U03	activity in the class
F2(c)	PEU_U01 PEU_U02 PEU_U03	test
P(c)	P = 0,25F1 + 0,75F2	

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] Markiewicz H. Instalacje elektryczne. WNT, Warszawa 2010.
 [2] Jabłoński W. Zapobieganie porażeniom elektrycznym w urządzeniach elektroenergetycznych WN, WNT, Warszawa 1992.
 [3] Norma arkuszowa PN-IEC 60364. Instalacje elektryczne w obiektach budowlanych.

SECONDARY LITERATURE:

- [1] Ustawa „Prawo budowlane”, wraz z rozporządzeniami wykonawczymi.

SUBJECT SUPERVISOR
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