

FACULTY OF ELECTRICAL
ENGINEERING**SUBJECT CARD**

Name in Polish: **Systemy ochrony przed zagrożeniami prądem elektrycznym 2**
 Name in English: **Systems of protection against electric shock 2**
 Main field of study (if applicable): **Electrical Engineering**
 Specialization (if applicable):
 Level and form of studies: **1st level, part-time**
 Kind of subject: **obligatory**
 Subject code: **ELR042465**
 Group of courses: **NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU):			20		
Number of hours of total student workload (CNPS):			54		
Form of crediting:			crediting with grade		
For group of courses mark (X) final course:					
Number of ECTS points:			2		
including number of ECTS points for practical (P) classes :			2		
including number of ECTS points for direct teacher-student contact (BK) classes:			1.40		

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Knowledge of the basic principles of electrical engineering
2. Basic knowledge of the construction and operation of the electrical equipment and apparatus
3. Basic ability to connect the measurement circuits
4. Basic ability to use the electrical quantities meters
5. Ability to cooperate in a team
6. Ability to think and act creatively

SUBJECT OBJECTIVES

- C1. Knowledge of operation rules of electric shock protection systems used in low-voltage installations
 C2. Knowledge of effectiveness criteria of electric shock protection systems in low-voltage installations
 C3. Knowledge of principles of low-voltage electrical installations testing

SUBJECT EDUCATIONAL EFFECTS*relating to knowledge:**relating to skills:*

- PEK_U01 Student is able to perform the verification measurements in low-voltage electrical installations
 PEK_U02 Student is able to evaluate the results of measurements
 PEK_U03 Student can make a report for verification

relating to social competences:

- PEK_K01 Student can effectively cooperate in a team performing electrical verification tests

PROGRAMME CONTENT

Form of classes - laboratory		Number of hours:
Lab 1	Presentation of safety rules and guidelines in the laboratory. Establish the requirements for crediting. General introduction to the stand of laboratory.	2
Lab 2	Resuscitating of persons shocked by electric current	2
Lab 3	Measurement of insulation resistance and electric strength test of electrical installation and electrical equipment	2
Lab 4	Examination of protection by automatic disconnection of supply with overcurrent devices	2
Lab 5	Examination of protection by automatic disconnection of supply with residual current devices. Measurement of the resistance and the continuity of protective conductors and protective equipotential bonding conductors.	2
Lab 6	Measurement of earth electrode resistance and the resistivity of soil	2
Lab 7	Measurement of insulation resistance of floors and walls. Measurement of touch voltage	2
Lab 8	Examination of the impact of TN and TT systems parameters on the electric shock hazard	2
Lab 9	Measurements of electric shock hazard and fire hazard in IT system.	2
Lab 10	Additional term Laboratory crediting	2
Total hours:		20

TEACHING TOOLS USED

- N1. Introductory, short informative lecture
 N2. Basic meters of electrical quantities
 N3. Special meters for electrical installations

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

Evaluation <i>F - forming (during semester) P - concluding (at semester end)</i>	Educational effect number	Way of evaluating educational effect achievement
F1(L)	PEK_U01 PEK_U02 PEK_K01	activity in the laboratory
F2(L)	PEK_U02 PEK_U03	report
P(L)	$P = 0,25F1 + 0,75F2$	

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] Instrukcje do ćwiczeń laboratoryjnych
 [2] Markiewicz H.: Bezpieczeństwo w elektroenergetyce: zagadnienia wybrane. WNT, Warszawa 2009

SECONDARY LITERATURE:

- [1] PN-IEC 60364 Instalacje elektryczne w obiektach budowlanych (norma wieloarkuszowa)
 [2] PN-HD 60364 Instalacje elektryczne niskiego napięcia (norma wieloarkuszowa)
 [3] Ustawa „Prawo budowlane” wraz z rozporządzeniami wykonawczymi

SUBJECT SUPERVISOR

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MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
ELR042465 - Systems of protection against electric shock 2
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Electrical Engineering**

Subject educational effect	Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)	Subject objectives	Programme content	Teaching tool number
PEK_U01	K1ETK_U29	C.1 C.2 C.3	Lab2 Lab3 Lab4 Lab5 Lab6 Lab7 Lab8 Lab9	N.1 N.2 N.3
PEK_U02	K1ETK_U29	C.1 C.2 C.3	Lab2 Lab3 Lab4 Lab5 Lab6 Lab7 Lab8 Lab9	N.1 N.2 N.3
PEK_U03	K1ETK_U29	C.1 C.2 C.3	Lab2 Lab3 Lab4 Lab5 Lab6 Lab7 Lab8 Lab9	N.1 N.2 N.3
PEK_K01	K1ETK_K05 K1ETK_K06	C.3	Lab1 Lab2 Lab3 Lab4 Lab5 Lab6 Lab7 Lab8 Lab9 Lab10	N.1 N.2 N.3