

FACULTY OF ELECTRICAL
ENGINEERING**SUBJECT CARD**

Name in Polish: **Ochrona odgromowa i przepięciowa w obiektach budowlanych**
 Name in English: **Lightning and overvoltage protection in buildings**
 Main field of study (if applicable): **Electrical Engineering**
 Specialization (if applicable): **Industrial Electrical Engineering**
 Level and form of studies: **2nd level, part-time**
 Kind of subject: **obligatory**
 Subject code: **ELR041165**
 Group of courses: **NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU):	11				
Number of hours of total student workload (CNPS):	81				
Form of crediting:	crediting with grade				
For group of courses mark (X) final course:					
Number of ECTS points:	3				
including number of ECTS points for practical (P) classes :					
including number of ECTS points for direct teacher-student contact (BK) classes:	2.10				

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Basic knowledge of electrical engineering and high-voltage technology

SUBJECT OBJECTIVES

- C1. Gaining knowledge about the techniques of lightning and surge protection
 C2. The student can select the devices to surge protection

SUBJECT EDUCATIONAL EFFECTS*relating to knowledge:*

- PEK_W01 The student has knowledge about the high-voltage pulse exposures
 PEK_W02 The student is become familiar with the devices to overvoltage protection of a building

*relating to skills:**relating to social competences:*

- PEK_K01 Is aware about the importance and non-technical aspects of engineering activities, i.e. influence on environment, therefore takes responsible actions.

PROGRAMME CONTENT

Form of classes - lecture		Number of hours:
Lec 1	The preliminary, introduction to the problems of the subject	2
Lec 2	Lightning strikes	2
Lec 3	External lightning protection equipment for buildings	2
Lec 4	Lightning protection zone concept	2
Lec 5	Limiting the surge in the electrical system of a building construction	2
Lec 6	Test	1
Total hours:		11

TEACHING TOOLS USED

- N1. Traditional lecture using multimedia presentation
N2. Student's own work

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(w)	PEK_W01 PEK_W02 PEK_K01	test
P(w)	P=F1	

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] Sowa A., Kompleksowa ochrona odgromowa i przepięciowa. Biblioteka COSiW SEP, Warszawa 2005.
[2] Szpor St., Samuła J., Ochrona odgromowa, tom 1, wiadomości podstawowe, WNT 1983.
[3] Szpor St., Ochrona odgromowa, tom2, Ochrona urz. elektroenergetycznych, WNT 1975.
[4] Szpor St., Ochrona odgromowa, tom 3, Piorunochrony, WNT 1978.

SECONDARY LITERATURE:

- [1] Dehn + Soehne, Lightning protection guide. 2007.
[2] Uman M.A., The art and science of lightning protection. Cambridge University Press 2008.

SUBJECT SUPERVISOR

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MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT **ELR041165 - Lightning and overvoltage protection in buildings** AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Electrical Engineering** AND SPECIALIZATION **Industrial 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_W01	S2ETP_W07	C.1 C.2	Lec1 Lec2 Lec3 Lec4 Lec5	N.1 N.2
PEK_W02	S2ETP_W07	C.1 C.2	Lec1 Lec2 Lec3 Lec4 Lec5	N.1 N.2
PEK_K01	K2ETK_K03	C.1 C.2	Lec1 Lec2 Lec3 Lec4 Lec5 Lec6	N.1 N.2