

FACULTY OF ELECTRICAL  
ENGINEERING**SUBJECT CARD**

Name in Polish: **Urządzenia elektryczne 3**  
 Name in English: **Electrical Devices 3**  
 Main field of study (if applicable): **Electrical Engineering**  
 Specialization (if applicable):  
 Level and form of studies: **1st level, full-time**  
 Kind of subject: **obligatory**  
 Subject code: **ELR042305**  
 Group of courses: **NO**

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

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**

1. Student has ordered knowledge of the network topology distribution and receiving electrical and environmental conditions of the installation.
2. Student has the knowledge of the construction, use and performance, and security of power connectors used in electrical installations (fuses, circuit breakers).
3. He knows the basic motor control circuits.
4. Student has a knowledge of range of the basis of electrical engineering, determines the parameters of the alternating current (AC) circuits.
5. Student knows the basic of computer service.

**SUBJECT OBJECTIVES**

- C1. To understand of basic legal and normative acts for the design of electrical installations and basic electrical design methodology.
- C2. To get to know the principles and criteria of electric lighting design.
- C3. To get the basic knowledge and skills determine the power requirements in buildings and planning electric installations.
- C4. To become skillful at the selection of electrical equipment distribution networks and receiving systems.
- C5. To get the basic knowledge and skills in the development of technical documentation in the design of electrical installations.

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

- PEK\_U01 The student should be able to formulate the requirements for electrical installations, plan power requirement and receiving installations in the sample building.
- PEK\_U02 Student is able to select the components of the distribution system (for example transformers, capacitor banks, inner power supply lines).
- PEK\_U03 The student should be able to develop electrical installations design documentation.

*relating to social competences:*

- PEK\_K01 Student understand the legal aspects and the non-technical aspects of engineering activities in design and well-established sense of responsibility for their actions engineering.

PROGRAMME CONTENT		
Form of classes - project		Number of hours:
Proj 1	Introduction to the course. Presentation of credit conditions. Distribution of project tasks. Discussion of the hierarchy and scope of the basic instruments for the design of electrical installations in buildings.	2
Proj 2	Planning a receiving installations in the building, lighting design.	2
Proj 3	Design of elements of the distribution network and receiving installations in the building.	2
Proj 4	Design of elements of the distribution network and receiving installations in the building.	2
Proj 5	Design of elements of the distribution network and receiving installations in the building.	2
Proj 6	Design of elements of the distribution network and receiving installations in the building.	2
Proj 7	Design of elements of the distribution network and receiving installations in the building.	2
Proj 8	Receiving of the project documentation.	1
Total hours:		<b>15</b>

TEACHING TOOLS USED
<p>N1. Short information lecture.</p> <p>N2. Supporting computer programs to design electrical installations.</p> <p>N3. Internet database of electrotechnical equipment.</p> <p>N4. Consultations and discussions.</p> <p>N5. Individual work.</p>

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT		
Evaluation <i>F – forming (during semester)</i> <i>P – concluding (at semester end)</i>	Educational effect number	Way of evaluating educational effect achievement
F1(P)	PEK_U01 PEK_U02 PEK_U03 PEK_K01	Problema discussion and active participation.
F2(P)	PEK_U01 PEK_U02 PEK_U03 PEK_K01	Evaluation of project preparation.
F3(P)	PEK_U01 PEK_U02 PEK_U03 PEK_K01	Defense of the project
P(P)	$P = 0,2F1 + 0,3F2 + 0,5F3$	

PRIMARY AND SECONDARY LITERATURE
<p><b>PRIMARY LITERATURE:</b></p> <p>[1] Dołęga W., Kobusiński M., Projektowanie instalacji elektrycznych w obiektach przemysłowych. Zagadnienia wybrane., Oficyna Wydawnicza PWR, Wrocław 2012;</p> <p>[2] Markiewicz H., Instalacje elektryczne, Wyd. 8, WNT, current edition</p> <p>[3] Rozporządzenie Ministra Infrastruktury z dnia 12 kwietnia 2002 r. w sprawie warunków technicznych jakim powinny odpowiadać budynki i ich usytuowanie. (DzU nr 75, poz. 690) z późn. zm. z dnia 13 lutego 2003 r. (DzU Nr 33, poz. 270) z dnia 7 kwietnia 2004 (DzU Nr 109, poz. 1156), z dnia 6 listopada 2008 r. (DzU Nr 201, poz. 1238) oraz z dnia 12 marca 2009 r. (DzU Nr 56, poz. 461), <a href="http://www.isip.sejm.gov.pl/prawo/index.html">http://www.isip.sejm.gov.pl/prawo/index.html</a></p> <p><b>SECONDARY LITERATURE:</b></p> <p>[1] Ustawa z dnia 7 lipca 1994 - Prawo budowlane (tekst jednolity: DzU 2006r. Nr 156, poz. 1118) z późn. zm. z dnia 10 maja 2007 r. (Dz. U. Nr 99, poz. 665), 19 września 2007r. (DzU Nr 191 poz.1373), 8 października 2008 r. (DzU Nr 206, poz. 1287), 26 czerwca 2008 (DzU N 145, poz. 914) oraz z dnia 6 maja 2010 r.(DzU Nr 121, poz. 809) <a href="http://www.isip.sejm.gov.pl/prawo/index.html">http://www.isip.sejm.gov.pl/prawo/index.html</a>.</p> <p>[2] Current Polish Standards,</p> <p>[3] Websites recommended by the Teacher.</p>

SUBJECT SUPERVISOR
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MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT  
**ELR042305 - Electrical Devices 3**  
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_U26	C.1 C.2 C.3	Proj1 Proj2 Proj3	N.1 N.4 N.5
PEK_U02	K1ETK_U26	C.2 C.3 C.4	Proj3 Proj4 Proj5 Proj6 Proj7	N.1 N.2 N.3 N.4 N.5
PEK_U03	K1ETK_U26	C.5	Proj3 Proj4 Proj5 Proj6 Proj7	N.1 N.2 N.4 N.5
PEK_K01	K1ETK_K05 K1ETK_K09	C.1	Proj1 Proj2 Proj3 Proj4 Proj5 Proj6 Proj7 Proj8	N.1 N.4