

FACULTY OF ELECTRICAL
ENGINEERING**SUBJECT CARD**

Name in Polish: **Elektryczne urządzenia odbiorcze**
 Name in English: **Electrical receiver**
 Main field of study (if applicable): **Electrical Engineering**
 Specialization (if applicable):
 Level and form of studies: **1st level, full-time**
 Kind of subject: **optional**
 Subject code: **ELR042404**
 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):	30		30		
Form of crediting:	crediting with grade		crediting with grade		
For group of courses mark (X) final course:					
Number of ECTS points:	1		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		0.70		

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Knowledge of mathematics and physics that allows the understanding of physical phenomena occurring in the thermogeneration and thermokinetic process
2. Basic knowledge of electrical engineering
3. Student can use meters of voltage, current, power, temperature and light of basic measurements
4. Student is able to statistically analyze experimental data and interpret the results
5. Student is able to work in a team
6. Student is able to think and act in a creative way

SUBJECT OBJECTIVES

- C1. Recognition of physical phenomena in equipment, which convert electric energy in to the light.
 C2. Recognition of physical phenomena in equipment, which convert electric energy in to the heat
 C3. Ability to perform measurements of light and designation of the operating characteristics of electrothermal equipment.

SUBJECT EDUCATIONAL EFFECTS*relating to knowledge:*

- PEK_W01 Student identifies and distinguishes the source of light, can describe physical phenomena in equipment, which convert electric energy into the light.
 PEK_W02 Student identifies the electrothermal equipment, can describe physical phenomena in equipment, which convert electric energy into the heat.
 PEK_W03 Student can name types and parameters of light sources and electrothermal devices and practically use lighting design rules

relating to skills:

- PEK_U01 Student can set basic parameters of electric light sources
 PEK_U02 Student is able to regulate the temperature of the resistance furnace and can determine the parameters of the electrothermal devices
 PEK_U03 Student is able to establish the basic operating characteristics of the electric arc furnace

relating to social competences:

- PEK_K01 Student learns to think and act in a creative way, and learns to work in teams

PROGRAMME CONTENT

Form of classes - lecture		Number of hours:
Lec 1	Conversion of electric energy on the useful energy forms	2
Lec 2	Thermogeneration and thermokinetic process. Heat losses	2
Lec 3	Three-dimensional distribution of the luminous flux	2
Lec 4	Electric light sources	2
Lec 5	Criteria of quality illumination	2
Lec 6	Ergonomic illumination design. Point-by-point and efficiency method	2
Lec 7	Control of illumination	2
Lec 8	Resistance materials. Electrothermal resistance conversion	2
Lec 9	Resistance direct-heat and indirect-heat furnace	2
Lec 10	Direct arc and indirect arc furnace	2
Lec 11	Induction furnace	2
Lec 12	Capacitive heating device	2
Lec 13	Radial metod of preheat	2
Lec 14	Temperature regulation and control electroheat equipment	2
Lec 15	Final test	2
Total hours:		30

Form of classes - laboratory		Number of hours:
Lab 1	Presentation of the rules of procedure health and safety in Laboratory. Establishment of passing rules. Rules of the drafting of reports from the laboratory. Laboratory exercises discussion.	2
Lab 2	Luminous flux measurements	2
Lab 3	Investigation of electric light sources and electric light fitting	2
Lab 4	Investigation of arc furnace model	2
Lab 5	Investigation of heating and self-cooling process of resistance furnace	2
Lab 6	Investigation of spot-welding machine	2
Lab 7	Investigation of microwave oven	2
Lab 8	Assessment and complementary laboratory backlogs	1
Total hours:		15

TEACHING TOOLS USED

- N1. Multimedia presentation
 N2. Information lecture
 N3. Measuring position

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_W03	Class attendance
F2(w)	PEK_W01 PEK_W02 PEK_W03	Test
P(w)	$P=0,1F1+0,9F2$	
F1(L)	PEK_U01 PEK_U02 PEK_U03	Activity in laboratory classes
F2(L)	PEK_U01 PEK_U02 PEK_U03	Laboratory report
P(L)	$P=0,25F1+0,75F2$	

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

Masny J, Teresiak Z.: Przemiany energii elektrycznej, WNT, Warszawa 1985
 Hering M.: Podstawy elektrotermii, Cz.1., WNT, Warszawa 1992
 Hering M.: Podstawy elektrotermii, Cz.2., WNT, Warszawa 1998

SECONDARY LITERATURE:

Rodacki T.: Urządzenia elektrotermiczne. Warszawa 2002
 Żagan W.: Podstawy techniki świetlnej, Warszawa, 2004

SUBJECT SUPERVISOR

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MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT **ELR042404 - Electrical receiver** 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_W01	K1ETK_ETP_W07	C.1	Lec1 Lec3 Lec4 Lec5	N.1 N.2
PEK_W02	K1ETK_ETP_W07	C.2	Lec2 Lec8 Lec9 Lec10 Lec11 Lec12 Lec13 Lec14	N.1 N.2
PEK_W03	K1ETK_ETP_W07	C.1 C.2	Lec4 Lec5 Lec6 Lec7 Lec9 Lec10 Lec11 Lec12 Lec13	N.1 N.2
PEK_U01	K1ETK_ETP_U04	C.3	Lab2 Lab3	N.3
PEK_U02	K1ETK_ETP_U04	C.3	Lab5 Lab6 Lab7	N.3
PEK_U03	K1ETK_ETP_U04	C.3	Lab4	N.3
PEK_K01	K1ETK_K05 K1ETK_K09	C.3	Lab1 Lab2 Lab3 Lab4 Lab5 Lab6 Lab7 Lab8	N.2 N.3