FACULTY OF ELECTRICAL ENGINEERING

SUBJECT CARD

Name in Polish:	**Podstawy inżynierii materiałowej 2**
Name in English:	**Fundamentals of Materials Engineering 2**
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:	**ELR041202**
Group of courses:	**NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU):			30		
Number of hours of total student workload (CNPS):			60		
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. Has a basic knowledge of the physical and chemical phenomena occurring in materials under the influence of exposure electrical, thermal, mechanical
2. Has a basic knowledge of the properties, structure and technology of materials and range of applications in the construction of electrical engineering
3. Has a basic knowledge of conductive materials, semiconductors, dielectrics and magnetics
4. Student properly and effectively applies laws and rules of physics to the qualitative and quantitative analysis of physical phenomenon with engineering character

SUBJECT OBJECTIVES

C1. Understanding the knowledge necessary to understand the basic electrical properties of materials
C2. The practice of the skills of applying basic measuring techniques to the investigations of electrotechnical materials properties
C3. The acquisition of basic practical skills of measuring instruments
C4. Promoting cooperation in a group and team work

SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:

relating to skills:

PEK_U01	Student is able to apply the laws and rules of physics to analysis of the physical phenomenon and to plan and execute the measurements in safe way, and then to elaborate the results of the measurements
PEK_U02	Student is able to measure properties of the materials used in electrical engineering

relating to social competences:

PEK_K01	Student has awareness of the responsibility for the own and team work and is ready to submit to work principles to obtain common aim

PROGRAMME CONTENT		
Form of classes - laboratory		**Number of hours:**
Lab 1	Introduction: requirements and method of crediting. Presentation of the BHP rules of the lab. The division into groups.	3
Lab 2	Investigation of dielectrics resistivity	3
Lab 3	Investigation of dielectric permittivity	3
Lab 4	Measurements of dielectric loss factor	3
Lab 5	Electric strength test	3
Lab 6	Investigation of magnetic properties of electrical steels samples	3
Lab 7	The study of the mechanical properties of insulating materials	3
Lab 8	The study of thermal properties	3
Lab 9	Investigation of selected physical and chemical properties of liquid dielectrics	3
Lab 10	Correction and supplementing class. Crediting	3
	Total hours:	**30**

TEACHING TOOLS USED
N1. Checking the student’s knowledge in the form of short tests and questions
N2. Wykonywanie pomiarów z wykorzystaniem aparatury laboratoryjnej
N3. Analysis of test results
N4. Development of measurement results in a report
N5. Consultation

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT		
Evaluation *F – forming (during semester)* *P – concluding (at semester end)*	**Educational effect number**	**Way of evaluating educational effect achievement**
F1(L)	PEK_U01 PEK_U02 PEK_K01	Rating of preparation for classes
F2(L)	PEK_U01 PEK_U02 PEK_K01	Crediting of reports from research
P(L)	P=0,5F1+0,5F2	

PRIMARY AND SECONDARY LITERATURE
PRIMARY LITERATURE:
[1] Podstawy inżynierii materiałowej. Laboratorium. Oficyna Wyd. Politechniki Wrocławskiej 2005
SECONDARY LITERATURE:
[1] Celiński Z., Materiałoznawstwo elektrotechniczne, Oficyna Wyd. Politechniki Warszawskiej, Warszawa, 2005 [2] Blicharski M., Wstęp do inżynierii materiałowej, Wyd. AGH, Kraków, 2003 [3] Kolbiński K., Słowikowski J., Materiałoznawstwo elektrotechniczne, WNT, 1988

SUBJECT SUPERVISOR
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MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
ELR041202 - Fundamentals of Materials Engineering 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_U06 K1ETK_U07	C.1 C.2 C.3 C.4	Lab2 Lab3 Lab4 Lab5 Lab6 Lab7 Lab8 Lab9 Lab10	N.1 N.2 N.3 N.4 N.5
PEK_U02	K1ETK_U08	C.1 C.2 C.3 C.4	Lab2 Lab3 Lab4 Lab5 Lab6 Lab7 Lab8 Lab9 Lab10	N.1 N.2 N.3 N.4 N.5
PEK_K01	K1ETK_K05	C.4	Lab1 Lab2 Lab3 Lab4 Lab5 Lab6 Lab7 Lab8 Lab9 Lab10	N.1 N.2 N.3 N.4