

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, part-time**  
 Kind of subject: **obligatory**  
 Subject code: **ELR051262**  
 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):			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. Obtaining the knowledge necessary to understand the basic properties of electrical materials  
 C2. The development of ability to use basic measurement techniques to study the properties of electrical materials  
 C3. The acquisition of basic practical skills of measuring instruments service  
 C4. Promoting of cooperation in the group and activity in teamwork

**SUBJECT LEARNING OUTCOMES***relating to knowledge:**relating to skills:*

- PEU\_U01 Student is able to apply learned principles and laws of physics to the analysis of physical problems, can plan and safely carry out measurements and develop the results  
 PEU\_U02 Student is able to measure properties of the materials used in electrical engineering

*relating to social competences:*

- PEU\_K01 Student has awareness of the responsibility for the own and team work, he can act as a team to achieve a common task

**PROGRAMME CONTENT**

<b>Form of classes - laboratory</b>		<b>Number of hours:</b>
Lab 1	Introduction: requirements and method of crediting. Presentation of the safety rules of work in the lab. The division into groups	2
Lab 2	Investigation of dielectrics resistivity	3
Lab 3	Determination of dielectric permittivity and dielectric loss factor.	3
Lab 4	Electric strength measurements	3
Lab 5	Investigation of magnetic properties of electrical sheets samples	3
Lab 6	The study of the mechanical properties of insulating materials. The study of thermal properties	3
Lab 7	Correction and supplementing classes. Laboratory assessment	3
Total hours:		<b>20</b>

**TEACHING TOOLS USED**

- N1. Checking the student's preparation for classes in the form of short tests and questions  
 N2. Carrying out measurements using laboratory equipment  
 N3. Analysis of test results  
 N4. Development of measurement results in a report  
 N5. Consultation

**EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT**

<b>Evaluation</b> <i>F – forming (during semester)</i> <i>P – concluding (at semester end)</i>	<b>Educational effect number</b>	<b>Way of evaluating educational effect achievement</b>
F1(L)	PEU_U01 PEU_U02 PEU_K01	Checking and evaluation laboratory preparation
F2(L)	PEU_U01 PEU_U02 PEU_K01	Assessment 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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