

FACULTY OF ELECTRICAL
ENGINEERING**SUBJECT CARD**

Name in Polish: **Technika wysokich napięć 2**
 Name in English: **High voltage technology 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: **ELR051102**
 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 knowledge of the basics of materials engineering.
2. He has knowledge of the basics of high-voltage engineering.

SUBJECT OBJECTIVES

- C1. Familiarize students with the basic knowledge about phenomena in dielectrics under the influence of strong electrical stress and the basics of high-voltage-measurement techniques.
- C2. Acquiring practical skills necessary for the proper assembly of testing and measuring devices, and proper implementation and development of measurement results.
- C3. Promoting cooperation in the group, teamwork.

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

PEU_U01 Can use the knowledge gained earlier to describe the mechanism of phenomena.

PEU_U02 Knows how to properly perform measurements high voltage systems and then develop and interpret the results.

relating to social competences:

PEU_K01 Awareness of teamwork and responsibility of all members of the team for the execution of the task

PROGRAMME CONTENT

Form of classes - laboratory		Number of hours:
Lab 1	Overview of Safety Regulations and Rules of Internal Procedure of laboratory. Getting to know the location of power switchboards, escape routes, firefighting equipment. Establish rules complete the course. Familiarize with handling control panel of high-voltage stand.	3
Lab 2	AC high-voltage test stand	3
Lab 3	Study of waveforms in model systems	3
Lab 4	Generation and measurement of DC high-voltage	3
Lab 5	The strength of air at 50 Hz alternating voltage in the homogeneous and poorly inhomogeneous field	3
Lab 6	Strength of air at 50 Hz alternating voltage in the inhomogeneous electric field	3
Lab 7	Surface strength in the air of insulation systems at 50 Hz alternating voltage	3
Lab 8	Measurements of loss, ionization voltage and partial discharge in insulation systems at AC 50 Hz high voltage	3
Lab 9	Distribution of voltage on insulators chain	3
Lab 10	The term to make up for not completed classes, credit for laboratory	3
Total hours:		30

TEACHING TOOLS USED

- N1. Verification of preparation for classes written and / or oral answer.
 N2. Taking measurements using laboratory equipment
 N3. Development of measurement results in the form of a report.

EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT

Evaluation <i>F - forming (during semester) P - concluding (at semester end)</i>	Educational effect number	Way of evaluating educational effect achievement
F1(L)	PEU_U01 PEU_U02 PEU_K01	Evaluation of preparation for classes
F2(L)	PEU_U01 PEU_U02 PEU_K01	Evaluation of the report
P(L)	$P=0.6 \cdot F1 + 0.4 \cdot F2$	

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] Fleszyński J., Laboratorium wysokonapięciowe w dydaktyce i elektroenergetyce, OWPW, 1999.
- [2] Fleszyński J., Lisiecki J., Pohl Z., Miernictwo wysokonapięciowe i laboratorium wysokich napięć, skrypt PW, 1990.
- [3] Flisowski Z., Technika wysokich napięć, WNT, 1988, i późniejsze
- [4] Juchniewicz J., Lisiecki J., Wysokonapięciowe układy izolacyjne, skrypt PW, 1980

SECONDARY LITERATURE:

- [1] norma PN-92/E-04060 (IEC 60-1), Wysokonapięciowa technika probiercza. Ogólne określenia i wymagania probiercze.

SUBJECT SUPERVISOR

Ryszard Kacprzyk, ryszard.kacprzyk@pwr.edu.pl