FACULTY OF ELECTRICAL ENGINEERING

# SUBJECT CARD

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|---|---|
| Name in Polish: | **Miernictwo wysokonapięciowe i diagnostyka izolacji** |
| Name in English: | **High Voltage Measurement and diagnostics of insulation** |
| Main field of study (if applicable): | **Electrical Engineering** |
| Specialization (if applicable): | **Industrial Electrical Engineering** |
| Level and form of studies: | **2nd level, full-time** |
| Kind of subject: | **obligatory** |
| Subject code: | **ELR051104** |
| 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. Basic knowledge In the range of high-voltage technique and electrical metrology.

## SUBJECT OBJECTIVES

C1. Gaining theoretical knowledge and skills in the range of high-voltage metrology.

C2. Gaining theoretical knowledge in the range of selected diagnostic test methods of materials and high voltage insulation systems.

## SUBJECT LEARNING OUTCOMES

*relating to knowledge:*

*relating to skills:*

PEU_U01 The Student is prepared to high-voltage measurement.

PEU_U02 The Student is prepared to diagnostic measurements of high voltage equipment and to work on positions related to the operation of such devices.

*relating to social competences:*

PEU_K01 The Student will gain knowledge about any risks to personnel and equipment

## PROGRAMME CONTENT

| | Form of classes - laboratory | Number of hours: |
|---|---|---|
| Lab 1 | Introduction, regulations, occupational health and safety regulations, requirements, scope lab | 3 |
| Lab 2 | Direct measurement methods of high voltage – sphere spark gap, electrostatic voltmeter | 3 |
| Lab 3 | Indirect measurement methods of high voltage – measurements of peak voltage value | 3 |
| Lab 4 | Determination of scale factors of high voltage measurement systems | 3 |
| Lab 5 | Tests of high surge voltage protection devices | 3 |
| Lab 6 | Tests of composite insulator under high AC voltage | 3 |
| Lab 7 | Tests of composite insulator under high surge voltage | 3 |
| Lab 8 | Measurements of partial discharges | 3 |
| Lab 9 | Examination of surface properties of insulating materials | 3 |
| Lab 10 | Correction term, credit lab | 3 |
| | Total hours: | **30** |

| TEACHING TOOLS USED |
|---|
| N1. Individual learning<br>N2. Laboratory measurements, analysis of results, preparation of reports |

| EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT | | |
|---|---|---|
| **Evaluation**<br>*F – forming (during semester)*<br>*P – concluding (at semester end)* | **Educational effect number** | **Way of evaluating educational effect achievement** |
| F1(L) | PEU_U01<br>PEU_U02<br>PEU_K01 | Preparation for laboratory classes |
| F2(L) | PEU_U01<br>PEU_U02<br>PEU_K01 | Preparation of the report |
| P(L) | P=0,7*F1+0,3*F2 | |

| PRIMARY AND SECONDARY LITERATURE |
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| **PRIMARY LITERATURE:**<br>E.Kuffel, W.S. Zaengel, J. Kuffel: High Voltage Engeneering Fundaments, Elsevier, 2000<br>**SECONDARY LITERATURE:** |

| SUBJECT SUPERVISOR |
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