

FACULTY OF ELECTRICAL
ENGINEERING**SUBJECT CARD**

Name in Polish: **Maszyny elektryczne 3**
 Name in English: **Electrical Machines 3**
 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: **ELR043104**
 Group of courses: **NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU):			15		
Number of hours of total student workload (CNPS):			30		
Form of crediting:			crediting with grade		
For group of courses mark (X) final course:					
Number of ECTS points:			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		

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Students know principles during electrical energy transformation and phenomena in synchronous machines, their parameters, properties and characteristics.
2. Student has knowledge about construction and phenomena in DC machines.
3. Student has knowledge about parameters, properties and characteristics of DC machines.
4. Student is able to explain phenomena, parameters and properties of synchronous machines.
5. Student is able to explain principles, phenomena, properties and characteristics of DC machines.
6. Student is able to measure and analyze characteristics and parameters of transformers and induction machines.
7. Student is able to work with electrical circuits safely, register electrical quantities and make reports.
8. Student is aware of their own responsibility for their work and a willingness to comply with the principles of teamwork.

SUBJECT OBJECTIVES

- C1. I to measurement techniques to determine characteristics and parameters of synchronous machines.
 C2. Skill to measurement techniques to determine characteristics and parameters of DC machines.

SUBJECT EDUCATIONAL EFFECTS*relating to knowledge:**relating to skills:*

- PEK_U01 Student is able to measure and analyze characteristics and parameters of synchronous machines.
 PEK_U02 Student is able to measure and analyze characteristics and parameters of DC machines.

relating to social competences:

- PEK_K01 Student is able to identify and solve problems of engineering.

PROGRAMME CONTENT		
Form of classes - laboratory		Number of hours:
Lab 1	Introduction, safety instructions.	2
Lab 2	Synchronous motor.	3
Lab 3	DC shunt generator.	3
Lab 4	DC shunt motor.	3
Lab 5	DC series motor	3
Lab 6	Grading.	1
Total hours:		15

TEACHING TOOLS USED
N1. Laboratory with measurement test stand.

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT		
Evaluation <i>F – forming (during semester)</i> <i>P – concluding (at semester end)</i>	Educational effect number	Way of evaluating educational effect achievement
F1(L)	PEK_U01 PEK_U02 PEK_K01	Laboratory preparation
F2(L)	PEK_U01 PEK_U02 PEK_K01	activity
F3(L)	PEK_U01 PEK_U02 PEK_K01	reports
P(L)	$P=0,3 \cdot F1 + 0,3 \cdot F2 + 0,4 \cdot F3$	

PRIMARY AND SECONDARY LITERATURE
PRIMARY LITERATURE: [1] Plamitzer A., Maszyny elektryczne, WNT, Warszawa 1989 [2] Latek W: Zarys maszyn elektrycznych. WNT W-wa 1974 r. [3] Antal L., Janta T., Zieliński P.: Maszyny elektryczne. Ćwiczenia laboratoryjne. Of. Wyd. PWr, Wrocław 2001.
SECONDARY LITERATURE: [1] Dąbrowski M. Projektowanie maszyn prądu przemiennego, WNT Warszawa 1994 [2] Dąbrowski M. Konstrukcja maszyn elektrycznych, WNT W-wa 1978 [3] Jezierski E.: Transformatory WNT Wa-wa 1983 r. [4] Latek W.: Maszyny elektryczne w pytaniach i odpowiedziach. WNT Wa-wa 1978 r. [5] Bajorek Z.: Maszyny elektryczne. WNT 1976 r.

SUBJECT SUPERVISOR
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MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT ELR043104 - Electrical Machines 3 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_U27	C.1	Lab2	N.1
PEK_U02	K1ETK_U27	C.1	Lab3 Lab4 Lab5	N.1
PEK_K01	K1ETK_K05	C.1 C.2	Lab1 Lab6	N.1