

FACULTY OF ELECTRICAL
ENGINEERING**SUBJECT CARD**

Name in Polish: **Podstawy elektrotechniki**
 Name in English: **Fundamentals of electrical engineering**
 Main field of study (if applicable): **Industrial Control Engineering**
 Specialization (if applicable):
 Level and form of studies: **1st level, full-time**
 Kind of subject: **obligatory**
 Subject code: **APR011312**
 Group of courses: **NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU):	30	15			
Number of hours of total student workload (CNPS):	90	60			
Form of crediting:	crediting with grade	crediting with grade			
For group of courses mark (X) final course:					
Number of ECTS points:	3	2			
including number of ECTS points for practical (P) classes :		2			
including number of ECTS points for direct teacher-student contact (BK) classes:	2.10	1.40			

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. He has the fundamental knowledge in terms of mathematics and physics upon the lower school level.

SUBJECT OBJECTIVES

- C1. The purpose of this education is to be able to find some ways of description and analysis for the circuit
- C2. The purpose of this education is to be able to determine some fundamental laws of the electric and magnetic field

SUBJECT LEARNING OUTCOMES*relating to knowledge:*

- PEU_W01 The student knows the fundamental laws and methods for solutions of the circuits
- PEU_W02 The student knows the fundamental laws of the electric and magnetic field.

relating to skills:

- PEU_U01 The student is able to define and to solve some equations describing linear circuit
- PEU_U02 The student can determine the electric field intensity, the current and the magnetic field intensity for the given charge distributions as well as the given currents

relating to social competences:

- PEU_K01 The student is able to think in a creative way.

PROGRAMME CONTENT

Form of classes - lecture		Number of hours:
Lec 1	Some fundamental quantities and units of electric field and circuit. The elements of circuit. Some fundamental laws of circuit: Ohms' law and Kirchhoff's laws	2
Lec 2	The transformation circuit concept	2
Lec 3	The Maxwell current method	2
Lec 4	The potential node concept	2
Lec 5	The superposition theorem	2
Lec 6	Selected problems of the circuit topology	2
Lec 7	The Thevenin theorem	2
Lec 8	The electric field source. The Gauss's law	2
Lec 9	The scalar and vector field. The electric field	2
Lec 10	The rotation problem for magnetic field.	2
Lec 11	The Ampere's law	2
Lec 12	The charge flow through the electric field. The electric field into materials	2
Lec 13	The charge flow through the magnetic field. The inductance.	2
Lec 14	The steady state into the RLC linear circuit with the sinusoidal time function source	2
Lec 15	The final written test.	2
Total hours:		30

Form of classes - class		Number of hours:
Cl 1	The electric field.	2
Cl 2	The magnetic field.	2
Cl 3	The circuit elements	2
Cl 4	The fundamental laws for circuits	2
Cl 5	Some solution concepts for circuits	2
Cl 6	The steady state into circuit with the sinusoidal condition	2
Cl 7	The electric charge distributions	2
Cl 8	The final written test.	1
Total hours:		15

TEACHING TOOLS USED

- N1. Lecture by traditional forms.
N2. Traditional class form.

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(w)	PEU_W01 PEU_W02	Test
P(w)	P=F1	
F1(c)	PEU_U01 PEU_U02	Test
P(c)	P=F1	

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] Kurdziel R. - Podstawy Elektrotechniki - any edition
- [2] Bolkowski S. - Teoria Obwodów Elektrycznych - any edition
- [3] Osowski S., Siwek K., Śmiałek M.: Teoria obwodów. Politechnika Warszawska 2006

SECONDARY LITERATURE:

- [1] Piątek Z., Jabłoński P.: Podstawy teorii pola elektromagnetycznego. WNT 2010
- [2] Bolkowski S., Brociek W., Rawa H.: Teoria obwodów elektrycznych. Zadania. WNT 2007
- [3] Łuczyski A., Skopec A. - Elektryczność i magnetyzm - Skrypt P.Wr. Wrocław 1994

SUBJECT SUPERVISOR
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