STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Circuits theory		**1010324221010320173**
Field of study	Profile of study (general academic, practical)	Year /Semester
Electrical Engineering	**(brak)**	**1 / 2**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
-	**polish**	**obligatory**
Cycle of study:	Form of study (full-time,part-time)	
First-cycle studies	**part-time**	
No. of hours		No. of credits
Lecture: **20** Classes: **20** Laboratory: **20** Project/seminars: **-**		**7**
Status of the course in the study program (Basic, major, other)	(university-wide, from another field)	
(brak)	**(brak)**	
Education areas and fields of science and art		ECTS distribution (number and %)
technical sciences		**7 100%**
Technical sciences		**7 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Rudimentary knowledge in mathematics, physicses and of bases of electrotechnology.
2	**Skills**	Ability of understanding and interpreting the knowledge handed over on classes. Ability of the effective self-education in the field associated with chosen subject.
3	**Social competencies**	Awareness of the need to expand its competence, readiness to undertake the cooperation in frames of the team.

Assumptions and objectives of the course:

Getting to know basic volumes and analysis methods of circumferences of the sinusoidal and nonsinusoidal alternating current. Getting to know the classic and operator method in analysis of states of transient linear arrangements. Introducing ways of calculating circumferences to periodic courses nonsinusoidal. Getting to know the theory of crosses and filters.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. to characterize principles of the modelling of elements and electric circuits in equilibria and transient - [K_W01++, K_W03++]
2. to explain the principle of the district modelling any linear of electromagnetic and electromechanical devices - [K_W03++, K_W04+++]

Skills:

1. to apply the knowledge in the scope of the theory of electric circuits essential to determine significant electromagnetic parameters - [K_U02++, K_U03+ ,K_U19+]
2. to obtain information from literature and the Internet, to work independently, independently to solve problems from the scope of the theory of analysis and the modelling of electric circuits - [K_U02++, K_U03+]

Social competencies:

1. is able to think and to operate in the enterprising way in the area of analysis of electric circuits - [K_K01+, K_K02++]

Assessment methods of study outcomes

Lecture:

? the evaluation of the knowledge and abilities of electric circuits demonstrated on a written exam from the theory.

Lecture exercises:

? assessing of the ability solving of arithmetic assignments on the scope of analysis electric circuits - checking the ability on every classes and 2 tests in the course of the semester.

Laboratory exercises:

? the test and awarding a bonus to the essential knowledge of problems for the accomplishment stated in the given area of laboratory tasks,

? evaluation of the knowledge and the abilities associated with the performance of a task exercise.

Getting additional points for the activity during classes, particularly too:

? proposing discussing of aspects of the issue,

? effectiveness of applying the acquired knowledge while solving a set problem,

? of the attention associated with improving teaching materials,

? aesthetic care of reports drawn up and tasks - in the framework of the own learning.

Course description

Method of symmetrical components. Linear electric circuits with periodic electricities deformed in the equilibrium. Non-linear circumferences of the alternating current. Classic and operator method Laplace'a analyses of transitional states in linear arrangements. Passive crosses. Solving accounting problems from the scope of analysis of electric circuits of the periodic electricity nonsinusoidal, of transient states and determining parameters of passive crosses.

Basic bibliography:

1. Bolkowski S.: "Teoria obwodów elektrycznych", WNT, Warszawa 1998.

2. Szabatin J., Śliwa E.: "Zbiór zadań z teorii obwodów. Część 1", Wydawnictwo Politechniki Warszawskiej, Warszawa 1997.

3. Skowronek K.: "Obwody elektryczne w ujęciu stochastycznym", Wydawnictwo Politechniki Poznańskiej, Poznań 2011.

4. Mikołajuk K., Trzaska Z.: "Zbiór zadań z elektrotechniki teoretycznej", WNT, Warszawa 1978.

Additional bibliography:

1. Krakowski M.: "Elektrotechnika teoretyczna", PWN, Warszawa 1973.

2. Chua L. O., Desoer C. A., Kuh E. S.: "Linear and nonlinear circuits", McGraw-Hill Inc., New York 1987.

3. Jastrzębska G., Nawrowski R.: "Zbiór zadań z podstaw elektrotechniki", Wydawnictwo Politechniki Poznańskiej, Poznań 2000.

4. Frąckowiak J., Nawrowski R., Zielińska M.: "Podstawy elektrotechniki. Laboratorium", Wydawnictwo Politechniki Poznańskiej, Poznań 2011.

Result of average student's workload

Activity	Time (working hours)
1. participation in lectures	20
2. participation in laboratory classes	20
3. participation in exercise classes	20
4. participation in consulting (lectures)	10
5. participation in consulting (exercise)	10
6. participation in consulting (laboratory)	10
7. preparation to test/exam	60
8. test/exam	4
9. preparation for the laboratory and preparation of the report	30

Student's workload

Source of workload	hours	ECTS
Total workload	184	7
Contact hours	94	3
Practical activities	60	2