STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Selected issues of the theory of circuits	**1010322221010324872**

Field of study	Profile of study (general academic, practical)	Year /Semester
Electrical Engineering	**general academic**	**1 / 2**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
-	**polish**	**obligatory**

Cycle of study:	Form of study (full-time,part-time)
Second-cycle studies	**full-time**

No. of hours	No. of credits
Lecture: **2** Classes: **1** Laboratory: **1** Project/seminars: **-**	**4**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
major	**from field**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**4 100%**
Technical sciences	**4 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Of the message in mathematics, physics and the theory of circumferences on the first degree level.
2	**Skills**	Ability of the deepened understanding and interpreting communicated messages and the effective self-education in the field associated with chosen subject.
3	**Social competencies**	Has an expanded awareness of the need to expand its competence, readiness to work individual and of cooperation in frames of the team.

Assumptions and objectives of the course:

Getting to know the theory of discreet circumferences. Getting to know principles of applying Fouriers transform and Laplace'a. Acquainting with principles the synthesis of passive two-way adapters. Getting to know topological analysis methods of electric circuits. Getting to know analyses of dynamics of electric circuits. Getting to know deepened analytical methods of calculating electric circuits, in particular real (random).

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

Knowledge:

1. to characterize, discreet electric circuits, real circumferences and signals, to describe and to explain laws of both the analysis method of dynamics and the stability of electric circuits, and their synthesis - [K_W03++, K_W04+, K_W09++]

2. to recognize, and to select appropriate methods of deepened analysis of electric circuits - [K_W04+, K_W06+++]

Skills:

1. to apply the knowledge in the scope of the deepened theory of electric circuits essential to determine real parameters (discreet and random) of electric circuits so as: rates of the stability, powers and their random indicators, transmitance - [K_U02++, K_U03+++, K_U07+]

2. to recruit specialist information from literature and the Internet, to work independently and collectively, independently and collectively to solve problems from the scope of the deepened theory of electric circuits - [K_U01++, K_U02++, K_U07+]

Social competencies:

1. is able to think and to operate in the enterprising way in the area of widened 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

Theory of discreet circumferences sometimes and as for the value. Principles of choice between Fouriers transform and Laplace'a. Methods and schemes of the synthesis of passive two-way adapters. Chosen problems of the topology of electric circuits. Issues of dynamics of electric circuits and their evaluations. Analytical methods of calculating random electric circuits.

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	30
2. participation in laboratory classes	15
3. participation in exercise classes	15
4. participation in consulting (lectures)	8
5. participation in consulting (exercise)	8
6. participation in consulting (laboratory)	8
7. preparation to test/exam	20
8. test/exam	4
9. preparation for the laboratory and preparation of the report	12

Student's workload

Source of workload	hours	ECTS
Total workload	120	4
Contact hours	88	3
Practical activities	35	1