STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Electrical Engineering**		Code **1010331231010320027**
Field of study **Automatic Control and Robotics**	Profile of study (general academic, practical) **(brak)**	Year /Semester **2 / 3**
Elective path/specialty **-**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **full-time**	
No. of hours Lecture: **-** Classes: **-** Laboratory: **30** Project/seminars: **-**		No. of credits **2**
Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**	
Education areas and fields of science and art		ECTS distribution (number and %)

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge of mathematics and physics.
2	**Skills**	Ability to use literature, solving linear equations, ability to operate on complex numbers, ability to observe and draw conclusions.
3	**Social competencies**	Ability to work in a team, attention to improving their own competence.

Assumptions and objectives of the course:

Practical test circuit theory of rights and the most important observation of electrical phenomena.

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

Knowledge:

1. It has a basic knowledge of the principles of measurement of electrical quantities, knows and understands the methods of measurement of electrical, familiar with computational methods and tools necessary to analyze the results of the experiment. - [K_W11 +++]

Skills:

1. . It can be used properly chosen methods and measuring instruments and measure the relevant signals and based on them to designate the characteristics of electrical and information about their essential properties. - [K_U15 +++]

2. Able to develop the documentation and give a presentation on the results of a laboratory task. - [K_U03 ++]

3. Able to work independently and in a team, is able to estimate the time needed to carry out the tasks commissioned. - [K_U02 ++]

Social competencies:

1. Understand the effects of non-technical aspects and engineering activities including its impact on the environment and the associated responsibility for decisions. - [K_K02 ++]

Assessment methods of study outcomes

Laboratory:

- test and favoring knowledge necessary for the accomplishment of problems in the area of laboratory tasks,
- continuous evaluation for each course - rewarding gain skills they met the principles and methods
- assessment of knowledge and skills related to the implementation of the tasks your practice, the assessment report performed exercise
- rewarding ability to work in a team practice performing the task detailed in the laboratory,
- developed aesthetic rewarding diligence reports and tasks within their own learning.

Course description

Laboratory:

The principles of superposition, proportional and mutual in electrical circuits. The theorems of Thevenin and Norton. The actual source of electrical energy, matching of receiver to source of electrical energy to maximum of power. RLC elements in sinusoidal alternating current circuits. The resonance in the serial circuits. The correction of load factor. The analysis of transient state in linear circuits. The symmetrical three-phase circuits. The analysis AC circuits with LC elements. Linear electric ciruits with periodic non-sinusoidal currents in steady state. The filters. The equivalent networks.

Basic bibliography:

1. Frąckowiak J., Nawrowski R., Zielińska M.: Laboratorium Elektrotechniki Teoretycznej, Wydawnictwo Politechniki Poznańskiej 2011.

Additional bibliography:

1. Skrypt Laboratorium Elektrotechniki teoretycznej, Wydawnictwo Politechniki Poznańskiej, Poznań 1998 wydanie VII.
2. Krakowski M.: Elektrotechnika teoretyczna. Tom 1. Obwody liniowe i nieliniowe?, PWN, Warszawa 1995.
3. Bolkowski S.: Teoria Obwodów Elektrycznych, WNT, Warszawa 1998.

Result of average student's workload

Activity	Time (working hours)
1. participation in laboratory classes	30
2. participate in the consultations	5
3. preparation and development of laboratory reports	30

Student's workload

Source of workload	hours	ECTS
Total workload	65	2
Contact hours	35	1
Practical activities	60	2