STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Selected issues in electrical engineering**		Code **1010312421010326992**
Field of study **Power Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **1 / 2**
Elective path/specialty **Sustainable Energy Development**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**
Cycle of study: **Second-cycle studies**	Form of study (full-time,part-time) **full-time**	
No. of hours Lecture: **-** Classes: **-** Laboratory: **15** Project/seminars: **-**		No. of credits **1**
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 **technical sciences** **Technical sciences**		ECTS distribution (number and %) **1 100%** **1 100%**

Responsible for subject / lecturer:

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Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge in the field of fundamentals of electrical engineering and metrology.
2	**Skills**	Skill in effective application of theoretical knowledge to practice.
3	**Social competencies**	Consciousness of the need for widening own competences.

Assumptions and objectives of the course:

Recognition of practical problems related to fundamentals of electrical engineering. Acquisition of practical skill in choosing the elements making part of an electric circuit, connecting the circuit and its analysis.

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

Knowledge:

1. Describe operation of three-phase symmetric and asymmetric system. - [K_W03 ++]
2. Perform frequency analysis of LC and RC four-terminal networks and to specify the differences in their operation conditions. - [K_W05 ++]
3. Describe the structure and operation principle of non-linear elements, to characterize their current-voltage characteristics, and dynamic and static resistances . - [K_W03 ++]

Skills:

1. Make use of the knowledge in the scope of fundamentals of electrical engineering, the methods of choosing the parts of an electric circuit, analysis, and assessment of its operation . - [K_U09+]
2. Work individually and in teams, to formulate a report of the measurement results. - [K_U03+]
3. Analyze operation of an electric circuit. - [K_U07+]

Social competencies:

1. Ability in independent thinking and creative activity . - [K_K01 +]

Assessment methods of study outcomes

Laboratory exercises:

? checking and promoting the knowledge of the problems necessary for carrying out the exercises in the sphere of definite laboratory tasks,

? assessment of the knowledge and skill related to fulfilling the exercise, assessment of the exercise report.

Additional points may be achieved for activity during the classes, particularly for:

? proposal of discussion of additional solutions of the problem;

? ability of cooperation in teams.

Course description

Operation of three-phase symmetric, three- and four-conductor systems in delta- or star-connection. Analysis of voltage distribution and current flow in three-phase systems at asymmetric supply and load. Recognition of properties of electric filters of LC and RC types. Properties of the filters used in D.C. power suppliers and their assessment. Studies and analysis of current-voltage characteristics and dynamic and static resistances of various non-linear elements.

Basic bibliography:

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

2. Bolkowski S. "Teoria Obwodów elektrycznych", WNT. Warszawa 1998

3. Kurdziel R. "Podstawy Elektrotechniki", WNT, Warszawa, 1973

Additional bibliography:

1. Krakowski M. "Elektrotechnika teoretyczna", PWN, Warszawa 1978

Result of average student's workload

Activity	Time (working hours)
1. participation in laboratory classes	15
2. participation in consultation	2
3. test/exam	2
4. preparation for laboratory exercises	8
5. carrying reports out	5
6. preparing to test/exam	3

Student's workload

Source of workload	hours	ECTS
Total workload	35	1
Contact hours	19	1
Practical activities	22	1