STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Mathematical modelling of power engineering installations	**1010315431010325648**

Field of study	Profile of study (general academic, practical)	Year /Semester
Power Engineering	**(brak)**	**2 / 3**
Elective path/specialty	**Subject offered in:**	**Course (compulsory, elective)**
-	**Polish**	**obligatory**

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

No. of hours	No. of credits
Lecture: **15** Classes: **-** Laboratory: **15** Project/seminars: **-**	**3**

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	**3 100%**
Technical sciences	**3 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge of electrical engineering, power engineering.
2	**Skills**	Ability to use a spreadsheet. Ability to effectively self-education in a field related to the chosen field of study.
3	**Social competencies**	Is aware of the need to broaden their competence, willingness to work together as a team.

Assumptions and objectives of the course:

Knowledge of the principles of construction, modeling, calculation, design and operation of electrical systems and networks.

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

Knowledge:

1. It has a basic and systematic knowledge of the modeling of power system components.ergetycznego . - [K_W04+++,K_W14+]
2. He knows the rules for calculating the effects of faults in the power system, such as short circuits. - [K_W04+++,K_W15+]

Skills:

1. Equivalent circuit is able to develop and analyze the transition state in the power system for a given configuration. - [KU_07+++, KU_10+]
2. It can use existing software or develop a proprietary computer program to analyze the transition state in the power system. - [KU_08++]

Social competencies:

1. Is aware of the responsibility of an power engineer in particular the impact of its activities on the security, including the state, linked to the occurrence of faults in the power system. - [K_K02+]

Assessment methods of study outcomes

Lecture:

? assess the knowledge and skills listed on the written exam,

? continuous evaluation for each course (rewarding activity and quality perception).

Laboratory:

? rewarding the 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, including an assessment report on the performed exercise.

Get extra points for the activity in the classroom, and in particular for:

? propose to discuss further aspects of the subject;

? the effectiveness of the application of the knowledge gained during solving the given problem.

Course description

Determination of mathematical models of electric power systems and networks. Calculation of steady state and transient processes and forecasting, calculation and optimization of load distribution. Calculation of short-circuit currents. The choice of system components.

Applied methods of teaching: lectures - multimedia presentations (including drawings, photos, animations, sound, films) supplemented by examples given on the whiteboard, interactive lecture with questions to students or specific students, lecture Initiation of discussion, consideration of various aspects of the presented issues, including: economic, environmental, legal, social, etc., presentation of a new topic preceded by a reminder of related content known to students from other subjects; laboratory - demonstrations, detailed review of the reports by the lab leader and commentary discussions, team work.

Basic bibliography:

1. Musiał E. "Instalacje i urządzenia elektroenergetyczne", WSiP, Warszawa 1998.

2. Markiewicz H. "Instalacje elektryczne", WNT, Warszawa,2000.

3. Lejdy B. "Instalacje elektryczne w obiektach budowlanych", WNT, Warszawa 2003.

4. Marzecki J. "Miejskie sieci elektroenergetyczne", Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 1996.

5. Strojny J., Strzałka J. "Zbiór zadań z sieci elektrycznych", Uczelniane Wydawnictwa Naukowo-Dydaktyczne AGH, Kraków 2000.

Additional bibliography:

1. Handke A., Mitkowski E. , Stiler J "Sieci elektroenergetyczne", Wydawnictwo Politechniki Poznańskiej, Poznań 1978

Result of average student's workload

Activity	Time (working hours)
1. participation in lectures	15
2. participation in laboratory classes	15
3. participate into consultations concerning the lecture	2
4. participate into consultations concerning the laboratory classes	4
5. preparation to laboratory classes	10
6. Preparation of laboratory reports	10
7. prepare for the exam	30
8. completion of laboratory classes	2
9. participation in exam	2

Student's workload

Source of workload	hours	ECTS
Total workload	71	3
Contact hours	38	1
Practical activities	37	1