

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Mathematical modelling of power engineering installations		Code 1010315331010325648
Field of study Power Engineering	Profile of study (general academic, practical) general academic	Year /Semester 2 / 3
Elective path/specialty -	Subject offered in: polish	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 15 Classes: - Laboratory: 15 Project/seminars: -		No. of credits 4
Status of the course in the study program (Basic, major, other) major		(university-wide, from another field) from field
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 4 100% 4 100%
Responsible for subject / lecturer: Prof. dr hab. inż. Władysław Opydo email: wladyslaw.opydo@put.poznan.pl tel. 616652685 Elektryczny ul. Piotrowo 3A, 60-965 Poznań		Responsible for subject / lecturer: Dr inż. Arkadiusz Dobrzycki email: arkadiusz.dobrzycki@put.poznan.pl tel. 616652685 Wydział Elektryczny ul. Piotrowo 3A, 60-965 Poznań
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. - [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 a 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		

<p>Lecture: ? assess the knowledge and skills listed on the written exam, ? continuous evaluation for each course (rewarding activity and quality perception).</p> <p>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.</p> <p>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.</p>		
Course description		
<p>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.</p>		
Basic bibliography:		
<ol style="list-style-type: none"> 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:		
<ol style="list-style-type: none"> 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