

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Mathematical modelling of power engineering installations		Code 1010312421010325648
Field of study Power Engineering	Profile of study (general academic, practical) general academic	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: 15 Classes: - Laboratory: 15 Project/seminars: -		No. of credits 3
Status of the course in the study program (Basic, major, other) other		(university-wide, from another field) university-wide
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 3 100% 3 100%
Responsible for subject / lecturer: Dr inż. Arkadiusz Dobrzycki email: arkadiusz.dobrzycki@put.poznan.pl tel. 616652685 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"> Musiał E. &#38;#38;#34;Instalacje i urządzenia elektroenergetyczne&#38;#38;#34;, WSiP, Warszawa 1998. Markiewicz H. &#38;#38;#34;Instalacje elektryczne&#38;#38;#34;, WNT, Warszawa,2000. Lejdy B. &#38;#38;#34;Instalacje elektryczne w obiektach budowlanych&#38;#38;#34;, WNT, Warszawa 2003. Marzecki J. &#38;#38;#34;Miejskie sieci elektroenergetyczne&#38;#38;#34;, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 1996. Strojny J., Strzałka J. &#38;#38;#34;Zbiór zadań z sieci elektrycznych&#38;#38;#34;, Uczelniane Wydawnictwa Naukowo-Dydaktyczne AGH, Kraków 2000. Handke A., Mitkowski E. , Stiler J &#38;#38;#34;Sieci elektroenergetyczne&#38;#38;#34;, Wydawnictwo Politechniki Poznańskiej, Poznań 1978. 		
Additional bibliography:		
<ol style="list-style-type: none"> Normy i rozporządzenia związane z sieciami i instalacjami elektrycznymi Internet ? wyselekcjonowana literatura tematu 		
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	2	
5. preparation to laboratory classes	5	
6. Preparation of laboratory reports	8	
7. prepare for the exam	10	
8. prepare for the completion of laboratory	7	
9. completion of laboratory classes	2	
10. participation in exam	2	
Student's workload		
Source of workload	hours	ECTS
Total workload	68	3
Contact hours	38	1
Practical activities	34	1