

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Mathematical modelling of power engineering installations</b>		Code <b>1010322321010325648</b>
Field of study <b>Power Engineering</b>	Profile of study (general academic, practical) <b>general academic</b>	Year /Semester <b>1 / 2</b>
Elective path/specialty <b>Ecological Source of Electrical Energy</b>	Subject offered in: <b>polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>Second-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>1</b> Classes: <b>-</b> Laboratory: <b>1</b> Project/seminars: <b>-</b>		No. of credits <b>3</b>
Status of the course in the study program (Basic, major, other) <b>other</b>		(university-wide, from another field) <b>from field</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>3 100%</b> <b>3 100%</b>
<b>Responsible for subject / lecturer:</b> Prof. dr hab. inż. Władysław Opydo email: wladyslaw.opydo@put.poznan.pl tel. 616652685 Elektryczny ul. Piotrowo 3A, 60-965 Poznań		<b>Responsible for subject / lecturer:</b> Dr inż. Arkadiusz Dobrzycki email: arkadiusz.dobrzycki@put.poznan.pl tel. 616652685 Wydział Elektryczny ul. Piotrowo 3A, 60-965 Poznań
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Basic knowledge of electrical engineering, power engineering.
2	<b>Skills</b>	Ability to use a spreadsheet. Ability to effectively self-education in a field related to the chosen field of study.
3	<b>Social competencies</b>	Is aware of the need to broaden their competence, willingness to work together as a team.
<b>Assumptions and objectives of the course:</b> Knowledge of the principles of construction, modeling, calculation, design and operation of electrical systems and networks.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
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+]		
<b>Skills:</b>		
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++]		
<b>Social competencies:</b>		
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+]		
<b>Assessment methods of study outcomes</b>		

<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>		
<b>Course description</b>		
<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>		
<p><b>Basic bibliography:</b></p> <ol style="list-style-type: none"> <li>1. Musiał E. "Instalacje i urządzenia elektroenergetyczne", WSiP, Warszawa 1998.</li> <li>2. Markiewicz H. "Instalacje elektryczne", WNT, Warszawa, 2000.</li> <li>3. Lejdy B. "Instalacje elektryczne w obiektach budowlanych", WNT, Warszawa 2003.</li> <li>4. Marzecki J. "Miejskie sieci elektroenergetyczne", Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 1996.</li> <li>5. Strojny J., Strzałka J. "Zbiór zadań z sieci elektrycznych", Uczelniane Wydawnictwa Naukowo-Dydaktyczne AGH, Kraków 2000.</li> <li>6. Handke A., Mitkowski E., Stiler J "Sieci elektroenergetyczne", Wydawnictwo Politechniki Poznańskiej, Poznań 1978</li> </ol>		
<p><b>Additional bibliography:</b></p> <ol style="list-style-type: none"> <li>1. Normy i rozporządzenia związane z sieciami i instalacjami elektrycznymi</li> <li>2. Internet ? wyselekcjonowana literatura tematu</li> </ol>		
<b>Result of average student's workload</b>		
<b>Activity</b>	<b>Time (working hours)</b>	
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	
<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>
Total workload	68	3
Contact hours	38	1
Practical activities	34	1