

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Computer aided calculations and decisionmaking in power		Code 1010315321010315649
Field of study Power Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 2
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: 5 Classes: - Laboratory: 10 Project/seminars: -		No. of credits 2
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		ECTS distribution (number and %) 2 100%
Responsible for subject / lecturer: dr hab. inż. Kazimierz Musierowicz, prof. nadzw. email: kazimierz.musierowicz@put.poznan.pl tel. 61 665 20 40 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge within the scope of basics of automatics, informatics and mathematics in the scope of solving of algebraic and differential equation systems
2	Skills	Program rules on general level. Ability to effective self-studying in the domain connected with chosen course of studying
3	Social competencies	Has a consciousness of necessity to widen competences and willingness to work in a team
Assumptions and objectives of the course: -To acquaint with computer calculation methods used to design electric power network systems, application of computer technology to control electric power processes. To acquaint with methods of computer aided taking decision in power plants and in electric power system.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Has detailed knowledge in the scope of principles of structure, modeling, designing and exploitation of electric power system elements - [K_W04+]		
2. Has arranged and theoretically based knowledge in the scope of computer aided calculation and making decision in electrical power engineering. - [K_W13+++]		
3. Has knowledge necessary to understand security problems of energy safety and particularly existing risks and the ways of level of safety increasing - [K_W15++]		
Skills:		
1. Is able to use acquainted methods and mathematical models, and to modify them if it is necessary for analysis and for designing of power systems - [K_U06+++]		
2. Is able to chose calculating method, to use or to realize proper program suitable to solve specific problem taking into account modern technical and technological solution, - [K_U08+++]		
3. Is able to perform economy analysis connected with power engineering investment and economic evaluation of energy sources collaboration - [K_U13++]		
Social competencies:		
1. Is able to think and act creatively and enterprising, understand necessity of formulating and transferring to community information and opinions referring to achievements of power engineering - [K_K01+++]		
2. Properly identifies and determines dilemma connected with energy safety of state - [K_K02+++]		

Assessment methods of study outcomes		
<p>Lectures</p> <ul style="list-style-type: none"> -evaluation of knowledge and of competences on exam (problem character) -permanent evaluation on every class rewarding for activity and quality of perception <p>Laboratory exercises</p> <ul style="list-style-type: none"> -preliminary test and rewarding the knowledge necessary for realization of problems connected with laboratory tasks -evaluation and rewarding for increase of competence of using acquainted rules and methods 		
Course description		
<p>-Computer systems of network calculation and aided design, calculations of power propagation and of voltage levels, calculation of faults in electric power network. Designing of electric power substations and of power networks (system Siemens). Simulation of work of power station. Practical acquaintance with numerical control systems/ Use of computer calculation and design tools in electric power engineering and electric power engineering automatics.</p>		
Basic bibliography:		
<ol style="list-style-type: none"> 1. Kulczycki J., Optymalizacja struktur sieci elektroenergetycznych, WNT, Warszawa 1990 r. 2. Kujszczyk Sz., Nowoczesne metody obliczeń elektroenergetycznych sieci rozdzielczych. WNT. Warszawa 1984 r. 3. Janiczek R., Eksploatacja elektrowni parowych. WNT. Warszawa 1992 r. 		
Additional bibliography:		
<ol style="list-style-type: none"> 1. Musierowicz K., Staszak B., Technologie informatyczne w elektroeneretyce, cz.I - przetwarzanie sygnałów. Wyd. PP. Poznań 2010 r. 2. Pawlik M., Układy i urządzenia potrzeb własnych elektrowni. WNT. Warszawa 1986 r. 3. Rakowski J., Automatyka ciepłych urządzeń siłowni. WNT. Warszawa 1976 r. 		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in lectures	5	
2. Participation in tutorials related to lectures	6	
3. Preparation to lecture test	10	
4. Participation in test	2	
5. Participation in laboratory classes	10	
6. Preparation to laboratory classes	10	
7. Preparation of laboratory exercises report	10	
Student's workload		
Source of workload	hours	ECTS
Total workload	53	2
Contact hours	23	1
Practical activities	10	1