

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Electric power machines and technologies		Code 1010311431010315639
Field of study Power Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 2 / 3
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 30 Classes: 15 Laboratory: 15 Project/seminars: -		No. of credits 4
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 Technical sciences		ECTS distribution (number and %) 4 100% 4 100%
Responsible for subject / lecturer: Krzysztof Sroka email: krzysztof.sroka@put.poznan.pl tel. 61 665 22 75 Elektryczny ul. Piotrowo 3A, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge of mechanics, thermodynamics and fluid mechanics and electrical engineering
2	Skills	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: The skills and competencies of machinery and power equipment, energy system design and evaluate its performance		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Has theoretically founded basic knowledge of primary energy conversion technologies to work, heat and electricity - [K_W06+++]		
2. He has a basic knowledge of mechanical and thermal energy facilities, nuclear and renewable energy, as well as refrigeration, gas, ventilation and environmental - [K_W06+++]		
3. He knows the basic conditions and technical problems associated with the use of different technologies and sources of energy - [K_W11++]		
Skills:		
1. Able to analyze of operation of the machine, describe the characteristic phenomena in the flow channels, design and installation of the machine to choose - [K_U07++K_U19+]		
2. Able to analyze basic and complex energy conversion systems - [K_U07++K_U18+]		
3. Albe to use theoretical knowledge to balance of energy technology systems - [K_U22++]		
Social competencies:		
1. Able to work in a group in the performance of laboratory tests and jointly present the effects of the work - [K_K04+]		
Assessment methods of study outcomes		

<p>Lectures: - evaluation of the knowledge and skills listed on the written exam, Classes: - credit on the basis of the current check messages and two written tests of the accounting tasks Laboratory: - tests the knowledge necessary for the accomplishment of the problems in the area of ??laboratory tasks, - assessment of knowledge and skills related to the implementation of the tasks your practice, the assessment of report of performed exercise, - obtaining additional points for the ability to work within a team practice performing the task detailed in the laboratory and developed aesthetic diligence reports.</p>		
Course description		
<p>Primary and processed forms of energy. The structure of energy resources. Engines and working machines ? basic types, working rules, ranges of applications. The main technologies of primary energy conversion to work, heat and electricity: internal combustion engines, steam technologies, gas technologies, gas-steam technologies. Comparative and real circuits. Construction of internal combustion engines, boilers, turbines, pumps, heat exchangers. Promising energy technologies.</p>		
Basic bibliography:		
<p>1. D. Laudyn, M. Pawlik, F. Strzelczyk ? Elektrownie, WNT W-wa 2000 2. W. M. Lewandowski - Proekologiczne źródła energii odnawialnej, WNT W-wa 2001</p>		
Additional bibliography:		
<p>1. W. Szuman ? Maszyny i urządzenia energetyczne, WSiP W-wa 1985 2. M. Pawlik, J. Skierski ? Układy i urządzenia potrzeb własnych. WNT W-wa 1986 3. P. Orłowski, W. Dobrzański, E. Szwarc - Kotły parowe. Konstrukcja i obliczenia, WNT W-wa 1979</p>		
Result of average student's workload		
Activity	Time (working hours)	
1. participation in the lectures	45	
2. participation in the laboratory exercises	15	
3. preparation to the laboratory exercises	14	
4. preparation of practical exercises reports	14	
5. participation in the auditorium exercises	15	
6. preparation to the auditorium exercises	7	
7. participation in the consulting on the auditorium exercises and laboratory exercises	5	
8. preparation to the exam	15	
9. participation in the exam	3	
Student's workload		
Source of workload	hours	ECTS
Total workload	133	4
Contact hours	83	3
Practical activities	48	2