

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Electric power machines and technologies		Code 1010314461010315639
Field of study Power Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 3 / 6
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: - Classes: - Laboratory: 15 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 Technical sciences		ECTS distribution (number and %) 2 100% 2 100%
Responsible for subject / lecturer: Bartosz Ceran email: bartosz.ceran@put.poznan.pl tel. 61 665 2523 of Electrical Engineering ul. Piotrowo 3A, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge of mechanics, thermodynamics, fluid mechanics and electrical engineering.
2	Skills	The ability to effectively self-education in a field related to the chosen field of study.
3	Social competencies	The student is aware of the need to expand their competences. Student is ready for teamwork.
Assumptions and objectives of the course: Acquiring the skills and competences of using energy machinery and equipment and evaluating their performance.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Student has organized knowledge of basic primary energy conversion technologies for work, heat and electricity. - [[K_W06+++]]		
2. Student has basic knowledge of construction of machinery and equipment for heating, nuclear and renewable energy, as well as refrigeration, gas, ventilation and environmental protection. - [[K_W06+++]]		
3. He knows the basic conditions and technical problems associated with the use of different technologies and sources of electricity. - [[K_W11++]]		
Skills:		
1. Student can analyze machine operation, describe phenomena occurring in characteristic flow channels, design and select machine for installation. - [[K_U07++K_U19+]]		
2. Student can analyze basic and complex energy conversion systems. - [[K_U07++K_U18+]]		
3. He can use his theoretical knowledge to balance the energy of technological systems. - [[K_U22++]]		
Social competencies:		
1. Student is able to work in a group while performing laboratory tests and present the effects of his work. - [[K_K04+]]		
Assessment methods of study outcomes		

Laboratory exercises: -passing the course on the basis of the current check of the message and two written reports of the measurements taken		
Course description		
During the course the following laboratory exercises will be carried out: 1.Measurement of centrifugal pumps. 2.Radial fans test. 3.Determining the operational characteristics of a wind turbine. 4.Determining the operational characteristics of a photovoltaic module. 5.Determining the operational characteristics of a water turbine.		
Basic bibliography: 1. J. Stańda, J. Gorecki, A. Andruszkiewicz: Badanie maszyn i urządzeń energetycznych, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2004		
Additional bibliography: 1. Z. Gnutek, W. Kordylewski: Maszynoznawstwo energetyczne, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2003 2. M. Pawlik, F. Strzelczyk: Elektrownie, WNT W-wa 2012, 2017		
Result of average student's workload		
Activity	Time (working hours)	
1. Realization of laboratory exercises.	15	
2. Preparation for laboratory exercises	15	
3. Participation in consultations related to laboratory exercises	10	
4. Prepare a report on laboratory exercises.	5	
Student's workload		
Source of workload	hours	ECTS
Total workload	45	2
Contact hours	20	1
Practical activities	25	1