

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Working Tests of Electric Devices</b>		Code <b>1010311361010306913</b>
Field of study <b>Electrical Engineering</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>3 / 6</b>
Elective path/specialty <b>Distribution Devices and Electrical</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>15</b> Classes: <b>-</b> Laboratory: <b>15</b> Project/seminars: <b>-</b>		No. of credits <b>2</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art		ECTS distribution (number and %)
<b>Responsible for subject / lecturer:</b>  dr hab. inż. Jerzy Janiszewski email: jerzy.janiszewski@put.poznan.pl tel. 61 665 20 28 Faculty of Electrical Engineering ul. Piotrowo 3A 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Basic knowledge of construction and operation of the electrical devices and systems as well as the measuring equipment and its application.
2	<b>Skills</b>	Ability to use the experimental tools, Ability to acquire information from the field literature, standards, working regulations and other sources as well as the substantial mining of the latter.
3	<b>Social competencies</b>	Understanding of the need for creative and responsible activity
<b>Assumptions and objectives of the course:</b> Getting knowledge of principles and methods of the electric devices and systems parameters? diagnostics.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. Has ordered knowledge in the scope of working tests of the typical electric devices and systems. - [K_W05++, K_W19+]		
<b>Skills:</b>		
1. Student is able to carry out the diagnostic measurements and to verify the tested object?s value/quality. - [K_U14++] 2. Student is able to carry out tests according to the regulation requirements referring to the safety and working conditions. - [K_U06++, K_U14++]		
<b>Social competencies:</b>		
1. Student understands the need for continuous learning including knowledge about modern diagnostic methods and legal regulations in force. - [K_K01 +] 2. Has understanding of need for interdisciplinary specialists? cooperation and has understanding of the need for device condition tests to provide its safe work. - [K_K06+]		
<b>Assessment methods of study outcomes</b>		

<p>Lecture: Assessment of the knowledge and skills during the problem-solving type examination, oral or written, on-line assessment at each class ( bonus for activity and perception quality).</p> <p>Lab class: test and priority/bonus for the knowledge necessary to accomplish the problems posed within the indicated lab-task area, assessment of the knowledge and skills related to the lab task accomplishment, assessment of the lab-task accomplishment report.</p> <p>Reaching extra points for activity in discussions, especially for:</p> <p>- effectiveness of implementation of the knowledge acquired when solving a given problem, ability to cooperate in the team accomplishing in practice a specific task either in lab or within the team-accomplished design, remarks related to the educational materials? enhancement, care and esthetic form of the reports.</p>		
<b>Course description</b>		
<p>1. Regulation and standards requirements referring to the measurements and diagnostic of chosen electric devices and systems.</p> <p>2. Completion and working tests ? goal and scope of tests: arrangement and safety of the accomplished measurements, time-schedules of tests, qualification requirements concerning the test makers.</p> <p>3. Electric and non-electric magnitudes measurements, diagnostic instruments and their accuracy, acquisition and reporting of the test results.</p> <p>4. Diagnostic tests of chosen distribution equipment, overhead lines construction elements, conductors, cables and low voltage installations.</p> <p>5. Alternative measurement techniques in working tests of the electric power devices.</p>		
<b>Basic bibliography:</b>		
<p>1. Maksymiuk J., Pochanke Z.: Obliczenia i badania diagnostyczne aparatury rozdzielczej, wyd.1, WNT, 2001.</p> <p>2. Kupras K.: Pomiar w elektroenergetyce ? wytyczne, wyd. SEP, 2007.</p> <p>3. Laskowski J.: Poradnik elektroenergetyka przemysłowego, COSTW SEP, Warszawa,1998.</p> <p>4. PEUE, Zeszyt nr 6: Eksploatacja baterii kondensatorów energetycznych do kompensacji mocy biernej, Instytut Energetyki, Dział I, WEMA, 1983.</p> <p>5. Au A., Maksymiuk J., Podgórski A.: Badania łączników elektroenergetycznych prądu przemiennego, WNT, Warszawa, 1978.</p> <p>6. Konopacki Z., Gryżewski Zd.: Prace kontrolno-pomiarowe przy urządzeniach elektroenerge-tycznych o napięciu znamionowym do 1 kV, COSTW SEP, Warszawa,1999.</p>		
<b>Additional bibliography:</b>		
<p>1. Poradnik inżyniera elektryka, WNT, 1997.</p> <p>2. Periodyki: Elektroinstalator, Elektroinfo,</p> <p>3. Publikacje internetowe.</p> <p>4. Normy przedmiotowe. (np: PN-IEC 60364-6-61:2000 Instalacje elektryczne w obiektach budowlanych. Sprawdzanie. Sprawdzanie odbiorcze., PN-91/E-06105/02: Wyłączniki wysokonapięciowe prądu przemiennego. Badania typu.)</p>		
<b>Result of average student's workload</b>		
<b>Activity</b>	<b>Time (working hours)</b>	
1. Lecture	15	
2. Labs	15	
3. Consultations	5	
4. Preparation to pass the course	5	
5. Elaboration of lab reports	10	
<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>
Total workload	50	2
Contact hours	32	1
Practical activities	25	1