

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Computer measurement systems</b>		Code <b>1010322321010320466</b>
Field of study <b>Electrical Engineering</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>1 / 2</b>
Elective path/specialty <b>Measurement Systems in Industry and</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>15</b> Classes: <b>-</b> Laboratory: <b>-</b> Project/seminars: <b>15</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 <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>2 100%</b> <b>2 100%</b>
<b>Responsible for subject / lecturer:</b>  dr inż. Zbigniew Krawiecki email: zbigniew.krawiecki@put.poznan.pl tel. 616652546 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 in the scope of electrotechnics, electronics, computer science and metrology
2	<b>Skills</b>	Ability of the efficient self-education in the area concerned with a chosen field of studies
3	<b>Social competencies</b>	Awareness of the necessity of competence broadening and ability to show a readiness to work as a team
<b>Assumptions and objectives of the course:</b> - Knowledge of the modern methods of measuring process automation, - Knowledge of the remote control of devices, data acquisition and processing in computer measurement systems - Knowledge of the modern measurement systems, including biophysical studies		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b> 1. Expanded knowledge in the scope of structure and design of complex microprocessor systems, especially for applications in measurements and control - [K_W08 +] 2. Expanded knowledge in the scope of measurements of electrical quantities - [K_W11 +]		
<b>Skills:</b> 1. Ability to acquire information from the literature, data bases and other sources; ability to integrate, interpret and critically evaluate the obtained information - [K_U01 +] 2. Ability to prepare the detailed documentation depending on realization of a given experiment, project task or research task - [K_U03 ++] 3. Ability to plan and realize measurements of the basic electrical parameters including extraction of parameters specifying electrical systems - [K_U09 ++]		
<b>Social competencies:</b> 1. Ability to think and act creatively and enterprisingly in the area of computer systems. - [K_K01 ++]		
<b>Assessment methods of study outcomes</b>		

<p>Lectures:</p> <ul style="list-style-type: none"> <li>- evaluation of the knowledge related to the content of lectures (test, computational and problem questions), awarding marks in projects</li> <li>- awarding attendance in lectures, activity and quality of perception).</li> </ul> <p>Projects:</p> <ul style="list-style-type: none"> <li>- evaluation of the knowledge and skills concerned with realization of independent or group projects,</li> <li>- evaluation of the project reports</li> </ul> <p>Getting the additional points relating to activity, especially including:</p> <ul style="list-style-type: none"> <li>- efficiency of application of the knowledge obtained while doing the project tasks;</li> <li>- ability to work as a team doing a given project task.</li> </ul>		
<b>Course description</b>		
<p>Updating 2017:</p> <p>Methods of education are orientated to students to motivate them to participate actively in education process by discussion and reports.</p> <p>Projects:</p> <p>Groups of students work as teams. Discussion on different methods and aspects of problem solutions. Detailed reviewing of particular projects documentation with:</p> <ul style="list-style-type: none"> <li>- General information, classification, functional structure and dynamics of measurements systems.</li> <li>- Characteristics of different kinds of communication interfaces used in measuring devices.</li> <li>- SCPI standard, model of a device, recognition of the device status, hierarchical structure of commands system, programming functions.</li> <li>- Remote control of devices with PC computer, examples of a multimeter and generator.</li> <li>- Application of DAQ cards in measuring systems - structure, functions, parameters, configuration.</li> </ul>		
<p><b>Basic bibliography:</b></p> <ol style="list-style-type: none"> <li>1. W. Winięcki, Organizacja komputerowych systemów pomiarowych, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 1997.</li> <li>2. P. Lesiak, D. Świsulski, Komputerowa technika pomiarowa, Agenda Wydawnicza Pomiar Automatyka Kontrola, Warszawa 2002.</li> <li>3. W. Nawrocki, Komputerowe systemy pomiarowe, WKŁ, Warszawa 2007.</li> </ol>		
<p><b>Additional bibliography:</b></p> <ol style="list-style-type: none"> <li>1. W. Nawrocki, Rozproszone systemy pomiarowe, WKŁ, Warszawa 2006.</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 projects classes	15	
3. Participation in consulting with lecturers	5	
4. Realization of projects	15	
5. Preparation to the exam	5	
<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>
Total workload	55	2
Contact hours	35	1
Practical activities	30	1