

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Computer measurement systems		Code 1010322321010320466
Field of study Electrical 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) full-time	
No. of hours Lecture: 15 Classes: - Laboratory: - Project/seminars: 15		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: dr inż. Zbigniew Krawiecki email: zbigniew.krawiecki@put.poznan.pl tel. 616652546 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge in the scope of electrotechnics, electronics, computer science and metrology
2	Skills	Ability of the efficient self-education in the area concerned with a chosen field of studies
3	Social competencies	Awareness of the necessity of competence broadening and ability to show a readiness to work as a team
Assumptions and objectives of the course: - 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		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 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 +]		
Skills: 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 ++]		
Social competencies: 1. Ability to think and act creatively and enterprisingly in the area of computer systems. - [K_K01 ++]		
Assessment methods of study outcomes		

<p>Lectures:</p> <ul style="list-style-type: none"> - evaluation of the knowledge related to the content of lectures (test, computational and problem questions), awarding marks in projects - awarding attendance in lectures, activity and quality of perception). <p>Projects:</p> <ul style="list-style-type: none"> - evaluation of the knowledge and skills concerned with realization of independent or group projects, - evaluation of the project reports <p>Getting the additional points relating to activity, especially including:</p> <ul style="list-style-type: none"> - efficiency of application of the knowledge obtained while doing the project tasks; - ability to work as a team doing a given project task. 		
Course description		
<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"> - General information, classification, functional structure and dynamics of measurements systems. - Characteristics of different kinds of communication interfaces used in measuring devices. - SCPI standard, model of a device, recognition of the device status, hierarchical structure of commands system, programming functions. - Remote control of devices with PC computer, examples of a multimeter and generator. - Application of DAQ cards in measuring systems - structure, functions, parameters, configuration. 		
<p>Basic bibliography:</p> <ol style="list-style-type: none"> 1. W. Winięcki, Organizacja komputerowych systemów pomiarowych, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 1997. 2. P. Lesiak, D. Świsulski, Komputerowa technika pomiarowa, Agenda Wydawnicza Pomiar Automatyka Kontrola, Warszawa 2002. 3. W. Nawrocki, Komputerowe systemy pomiarowe, WKŁ, Warszawa 2007. 		
<p>Additional bibliography:</p> <ol style="list-style-type: none"> 1. W. Nawrocki, Rozproszone systemy pomiarowe, WKŁ, Warszawa 2006. 		
Result of average student's workload		
Activity	Time (working hours)	
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	
Student's workload		
Source of workload	hours	ECTS
Total workload	55	2
Contact hours	35	1
Practical activities	30	1