

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Laboratory of electronic circuits		Code 1010324391010325955
Field of study Electrical Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 5 / 9
Elective path/specialty Measurement Systems in Industry and	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: - Project/seminars: 9		No. of credits 1
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 %) 1 100% 1 100%
Responsible for subject / lecturer: dr inż. Arkadiusz Hulewicz email: arkadiusz.hulewicz@put.poznan.pl tel. 61 665 25 46 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 electrical engineering and electronics Basic knowledge in the area of electronic analogue circuits
2	Skills	Ability of the efficient self-education in the area concerned with design and construction of electronic circuits
3	Social competencies	Ability of the necessity of broadening of the competencies and the readiness of submitting the cooperation in a team
Assumptions and objectives of the course: - Knowledge of basis of design, assembly and starting of electronic circuits. - Knowledge of properties and application possibilities of analog transducers.		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. Ability to describe application possibilities of current measuring systems - [K_W14 +++, K_W18 +]		
Skills: 1. Ability to design the measuring systems creatively, using possibilities offered by new technologies, with regard of the limitations of the current level of knowledge and technique - [K_U03 ++] 2. Ability to work independently and as a team in design and construction companies - [K_U21 +]		
Social competencies: 1. Ability to think and act enterprisingly in the area of the measuring systems to be used in industry - [K_K01 +, K_K04 +]		
Assessment methods of study outcomes		
Projects: - continuous estimating with the tests, - awarding the skill increase, - evaluation of the knowledge and skills concerning the realization of an individual project, evaluation of the made final project.		
Course description		

<p>Updating 2017: Methods of education are orientated to students to motivate them to participate actively in education process by discussion and reports.</p> <p>Projects: 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"> - Basics of electronic circuits design. - Principles of electronic circuits design, that have to meet the given assumptions, and their independent assembly. - Assumptions to be used in assembly and starting of electronic circuits. - Starting and testing of the designed and constructed circuit. 		
<p>Basic bibliography:</p> <ol style="list-style-type: none"> 1. U. Tietze, Ch. Schenk, Układy półprzewodnikowe, WNT, Warszawa 2001 2. J. Zakrzewski, Czujniki i przetworniki pomiarowe, Wyd. Politechniki Śląskiej, Gliwice 2004 3. Z. Kulka, M. Nadachowski, Analogowe układy scalone, WKŁ, Warszawa 1985. 4. Hulewicz A., Krawiecki Z., Programy symulacyjne elektronicznych układów analogowych, Poznan University of Technology Academic Journals, Electrical Engineering No 88, Computer Applications in Electrical Engineering 2016, Poznan 2016, s. 57-66. 		
<p>Additional bibliography:</p> <ol style="list-style-type: none"> 1. A. Guziński, Liniowe elektroniczne układy analogowe, WNT, Warszawa 1994. 2. Z. Kulka, A. Libura, M. Nadachowski, Przetworniki analogowo-cyfrowe i cyfrowo-analogowe, WKŁ, Warszawa 1987 		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in projects classes	9	
2. Participation in consulting with the lecturer	4	
3. Realization of projects	32	
Student's workload		
Source of workload	hours	ECTS
Total workload	39	1
Contact hours	13	1
Practical activities	41	2