

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Laboratory of electronic circuits		Code 1010321371010325955
Field of study Electrical Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 4 / 7
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) full-time	
No. of hours Lecture: - 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. 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. 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. 2. U. Tietze, Ch. Schenk, Układy półprzewodnikowe, WNT, Warszawa 2009 3. J. Zakrzewski, Czujniki i przetworniki pomiarowe, Wyd. Politechniki Śląskiej, Gliwice 2004 4. Z. Kulka, M. Nadachowski, Analogowe układy scalone, WKŁ, Warszawa 1985. 		
<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 		
<p>Result of average student's workload</p>		
<p>Activity</p>		<p>Time (working hours)</p>
1. Participation in projects classes		15
2. Participation in consulting with the lecturer		12
3. Realization of projects		15
<p>Student's workload</p>		
<p>Source of workload</p>	<p>hours</p>	<p>ECTS</p>
Total workload	42	2
Contact hours	27	1
Practical activities	30	1