

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Simulation methods of testing the electronic circuits		Code 1010341771010329419
Field of study Mathematics in Technology	Profile of study (general academic, practical) general academic	Year /Semester 4 / 7
Elective path/specialty Electronic circuits and measurement	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies (Polish Qualifications Framework level six)	Form of study (full-time, part-time) full-time	
No. of hours Lecture: - Classes: - Laboratory: - Project/seminars: 30		No. of credits 4
Status of the course in the study program (Basic, major, other) other		(university-wide, from another field) university-wide
Education areas and fields of science and art Technical sciences Technical sciences		ECTS distribution (number and %) 4 100% 4 100%
Responsible for subject / lecturer: dr hab. inż. Andrzej Odon email: andrzej.odon@put.poznan.pl tel. 61 665 2599 Faculty of Electrical Engineering Piotrowo 3A 60-965 Poznan		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge in the scope of electrotechnics and metrology. Basic knowledge in the scope of electronics, including analog and digital electronic circuits [K_W08 (P6S_WG)]
2	Skills	Ability of the efficient self-education in the area concerned with the module [K_U10 (P6S_UW)]
3	Social competencies	Awareness of the necessity of competence broadening and ability to show readiness to work as a team [K_K01 (P6S_KK)]
Assumptions and objectives of the course: Skills in the scope of design and analysis of the electronic analog and digital circuits with application of computer assistance to simulate these circuits.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Ability to explain the principles and techniques of measurement signals acquisition and processing for the modern applications in industry and biomedical engineering – [K_W07 (P6S_WG)] 2. Ability to describe the application areas and potential of the modern measurement systems – [K_W07 (P6S_WG)]		
Skills:		
1. Ability to design creatively the modern measurement systems, using the possibilities offered by presently available technologies, taking into account the limitations of the knowledge and technique status - [K_U05 (P6S_UW)]		
Social competencies:		
1. Ability to think and act enterprisingly in the area of the moderne measurement systems - [K_K01 (P6S_KK)]		

Assessment methods of study outcomes		
<p>-Projects:</p> <ul style="list-style-type: none"> - continuous evaluation, at all classes, and awarding the skill increase in the use of the known principles and methods, - evaluation of the knowledge and skills related to a given group or independent project and evaluation of the prepared reports. 		
Course description		
<p>Updating 2018</p> <ul style="list-style-type: none"> - Design and analysis of properties of the selected electronic systems and carrying out the simulation studies using specialized programming environments. - Making the circuit diagrams by the use of MultiSIM environment. - Application of the MultiSIM environment for the DC, AC, frequency and time analysis of electronic circuits. 		
Basic bibliography:		
<ol style="list-style-type: none"> 1. T. Bogart, J. Beasley, G. Rico, Electronic Devices and Circuits, Prentice-Hall, Inc., New Jersey 2001. 2. U. Tietze, Ch. Schenk, Układy półprzewodnikowe, WNT, Warszawa 2001. 3. K. Baranowski, A. Welo, Symulacja układów elektronicznych, Wydawnictwo MIKOM, Warszawa 1996. 		
Additional bibliography:		
<ol style="list-style-type: none"> 1. NI Multisim Interactive Demonstration http://zone.ni.com/wv/app/doc/p/id/wv-655 2. Krystyna Maria Noga, Marcin Radwański, Multisim. Technika cyfrowa w przykładach, Wydawnictwo BTC Legionowo 2009. 		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in projects classes	30	
2. Participation in consulting with lecturers	30	
3. Realization of projects	40	
Student's workload		
Source of workload	hours	ECTS
Total workload	100	4
Contact hours	60	2
Practical activities	70	1