

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Analog and digital electronic systems		Code 1010311361010321814
Field of study Electrical Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 3 / 6
Elective path/specialty Microprocessor's Control Systems in	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: 30 Classes: - Laboratory: 15 Project/seminars: 15		No. of credits 4
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 %) 4 100% 4 100%
Responsible for subject / lecturer: dr hab. inż. Michał Gwóźdź email: michal.gwozdz@put.poznan.pl tel. 61 665 2646 Faculty of Electrical Engineering ul. Piotrowo 3A 60-965 Poznań		Responsible for subject / lecturer: mgr inż. Adam Gulczyński email: adam.gulczynski@put.poznan.pl tel. t61 665 2285 Faculty of Electrical Engineering ul. Piotrowo 3A 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Knows the rules of operation and parameters of the basic elements of electronic and microelectronic
2	Skills	Knows how to apply the knowledge in electronics to analyze the operation of analog and digital electronic circuits in the primary
3	Social competencies	Is able to think and act in an entrepreneurial way in the area of electronic design
Assumptions and objectives of the course: Getting to know the principles of operation of complex analog and analog-to-digital electronic circuits. Acquisition of skills to design analog-to-digital electronic systems at the primary level.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Can describe the operating principles and parameters of specialized microelectronics circuits, characterize the structure and the use of electronics analog-and-digital systems at basic level - [K_W02 + K_W07 ++ K_W14 +++] 2. Can describe the basic criteria of the design of electronic systems - [K_W04 + K_W014+++]		
Skills:		
1. Knows how to apply the knowledge in the field of electronics design of electronics analog-and-digital systems - [K_U03 ++ K_U17 ++] 2. Can define the criteria necessary for the proper design of electronics analog-and-digital systems at the basic level - [K_U03 ++ K_U07 ++]		
Social competencies:		
1. Able to think and act in an entrepreneurial way in the area of design of electronics systems - [K_K02 ++]		
Assessment methods of study outcomes		

<p>Lecture</p> <ul style="list-style-type: none"> - Assess the knowledge and skills indicated in a written test, <p>Project classes and laboratory exercises:</p> <ul style="list-style-type: none"> - Test and rewarding knowledge necessary for the accomplishment of the problems in the area of ??tasks in the laboratory, - Continuous assessment, rewarding gain skills they met the principles and methods - Assess the knowledge and skills related to the implementation of laboratory exercises, evaluation reports performed exercise. <p>Get extra points for the activity in the classroom, and in particular for:</p> <ul style="list-style-type: none"> - Proposing to discuss additional aspects of the subject; - The effectiveness of the application of knowledge when solving a given problem; - Ability to work within a team practically performing the task detailed in the laboratory; - Comments relating to the improvement of teaching materials; - Aesthetic diligence reports and tasks? in the framework of self-study. 		
Course description		
<p>Properties of specialized microelectronic circuits for analog signal processing. Introduction to the analog-to-digital signals. Construction and performance analog-to-digital and digital-to-analog. Construction and design principles of signal path from a transmitter physical quantity into an electrical signal. Analog-to-digital and digital-to-analog system microprocessor. Principles of designing analog-to-digital electronic systems.</p>		
Basic bibliography:		
<ol style="list-style-type: none"> 1. Z. Kulka, M. Nadachowski, Analogowe układy scalone, WKŁ, W-wa, 1980 2. A. Borkowski, Układy scalone w stabilizatorach napięcia stałego, WNT, Warszawa, 1985 3. Z. Kulka, A. Libura, M. Nadachowski, Przetworniki analogowo-cyfrowe i cyfrowo-analogowe, WKiŁ, Warszawa, 1987 4. W. Borodziejewicz, K. Jaszczak, Cyfrowe przetwarzanie sygnałów, WNT, Warszawa, 1987 		
Additional bibliography:		
<ol style="list-style-type: none"> 1. J. W. Cofron, W. E. Long, Technika sprzęgania układów w systemach mikroprocesorowych, WNT, Warszawa, 1988 2. D.F. Hoeschele, Analog-to-digital and digital-to-analog conversion techniques, John Wiley & Sons, New York, 1994 		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in classes	60	
2. Participation in consultations	10	
3. Individual development of the project (project classes)	15	
4. Udział w opracowaniu sprawozdań (zajęcia laboratoryjne)	10	
Student's workload		
Source of workload	hours	ECTS
Total workload	95	4
Contact hours	70	3
Practical activities	15	1