

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Signal processors		Code 1010325341010322112
Field of study Electrical Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 2 / 4
Elective path/specialty Microprocessor's Control Systems in	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time,part-time) part-time	
No. of hours Lecture: 9 Classes: - Laboratory: 9 Project/seminars: 9		No. of credits 3
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 %) 3 100% 3 100%
Responsible for subject / lecturer: dr hab. inż. Michał Gwóźdź email: michal.gwozdz@put.poznan.pl tel. 61 665 2646 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		Responsible for subject / lecturer: mgr inż. Adam Gulczyński email: adam.gulczynski@put.poznan.pl tel. 61 665 2285 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	The knowledge of the architecture of microprocessor systems and principles of programming in high level languages at a basic level
2	Skills	The ability to apply knowledge of the basics of computer programming microprocessor systems
3	Social competencies	The ability to think and act in an entrepreneurial way in the area of software design for microprocessor systems
Assumptions and objectives of the course: Become familiar with the architecture and applications of digital signal processors. Acquisition of skills to design digital signal processing algorithms in real time. Skills in programming of digital signal processors based on the selected runtime.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Can describe the architecture, operation, and describe applications of digital signal processors - [K_W07 ++ K_W08 +++]		
2. Can describe the basic design criteria for digital signal processing algorithms - [K_W06 +]		
Skills:		
1. Knows how to apply the knowledge in the field of signal processing techniques for the design of digital signal processing algorithms - [K_U13 +]		
2. Can apply the selected runtime programming signal processors for specific applications - [K_U15 +]		
Social competencies:		
1. Able to think and act in an entrepreneurial way in the area of design of digital signal processing algorithms - [K_K01 ++]		
Assessment methods of study outcomes		

<p>Lecture</p> <p>? assess the knowledge and skills indicated in a written test</p> <p>Project classes and laboratory exercises:</p> <p>? test and rewarding knowledge necessary for the accomplishment of the problems in the area of ??tasks in the laboratory,</p> <p>? continuous assessment, rewarding gain skills they met the principles and methods</p> <p>? assess the knowledge and skills related to the implementation of laboratory exercises, evaluation reports performed exercise.</p> <p>Get extra points for the activity in the classroom, and in particular for:</p> <p>? propose to discuss additional aspects of the subject;</p> <p>? effectiveness of the application of knowledge when solving a given problem;</p> <p>? the ability to work within a team practically performing the task detailed in the laboratory;</p> <p>? comments relating to the improvement of teaching materials;</p> <p>? aesthetic diligence reports and jobs - in the framework of self-study.</p>		
Course description		
<p>The essence of a digital signal processor. Types and division of DSP. Arithmetic fixed- and floating. Algorithms for digital filtering (FIR, IIR) and spectrum analysis of signals (DFT, FFT). Architecture of digital signal processors based processor family floating Analog Devices Inc. ADSP-21000. Cooperation digital signal processor with external systems. The process of initializing the processor. List of orders. Applications of DSP to process signals in real time. Design tools and runtime. Construction microcomputer system based on DSP.</p>		
<p>Basic bibliography:</p> <ol style="list-style-type: none"> 1. R. Steiglitz, Wstęp do sygnałów dyskretnych, MON, Warszawa, 1979 2. A. V. Oppenheim, R. E. Schafer, Cyfrowe przetwarzanie sygnałów, WKŁ, Warszawa 1979 3. A. Dąbrowski, Przetwarzanie sygnałów przy użyciu procesorów sygnałowych, Wydawnictwo Politechniki Poznańskiej, Poznań, 1997 4. R. G. Lyons, Wprowadzenie do cyfrowego przetwarzania sygnałów, WKŁ, Warszawa, 1999 		
<p>Additional bibliography:</p> <ol style="list-style-type: none"> 1. S.W. Smith, The Scientist and Engineer?s Guide to Digital Signal Processing (Second Edition), California Technical Publishing, San Diego CA, 1999 2. Documentation and application notes of DSP families ADSP-2106X and ADSP-2136X - available at: www.analog.com 		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in lecture classes	27	
2. Participation in consultations	5	
3. Individual development of the project (project classes)	10	
4. Participation in the development of reports (laboratory classes)	5	
Student's workload		
Source of workload	hours	ECTS
Total workload	47	3
Contact hours	32	2
Practical activities	9	1