

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Microprocessors and signal processors</b>		Code <b>1010804151010811241</b>
Field of study <b>Electronics and Telecommunications</b>	Profile of study (general academic, practical) <b>general academic</b>	Year /Semester <b>3 / 5</b>
Elective path/specialty <b>-</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>part-time</b>	
No. of hours Lecture: <b>20</b> Classes: <b>-</b> Laboratory: <b>20</b> Project/seminars: <b>-</b>		No. of credits <b>5</b>
Status of the course in the study program (Basic, major, other) <b>major</b>		(university-wide, from another field) <b>from field</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>5 100%</b> <b>5 100%</b>
<b>Responsible for subject / lecturer:</b>  dr inż. Andrzej Stelter email: astelter@et.put.poznan.pl tel. 61 665 3915 Faculty of Electronics and Telecommunications ul. Piotrowo 3A 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Has a basic knowledge of binary, decimal and hexadecimal numeral systems. Knows how to convert numbers between these systems. Has knowledge of mathematical logic.
2	<b>Skills</b>	Is able to obtain information from literature and other sources.
3	<b>Social competencies</b>	Is aware of the need for further self-study.
<b>Assumptions and objectives of the course:</b> Familiarize student with microcontrollers, microprocessors, digital signal processors and microprocessor system architecture. Teach programming in assembly language.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b> 1. Has a systematic knowledge of computer architecture. Has a systematic knowledge of microcontroller, microprocessor and microprocessor system architecture and programming in assembly language, and architecture and programming of specialized processors. - [K1_W13]		
<b>Skills:</b> 1. Is able to extract information from Polish or English language literature, databases and other sources. Is able to synthesize gathered information, draw conclusions, and justify opinions. - [K1_U01] 2. Is capable of studying autonomously. - [K1_U05]		
<b>Social competencies:</b> 1. Is aware of the limitations of his/her current knowledge and skills; is committed to further self-study. - [K1_K01] 2. Demonstrates responsibility and professionalism in solving technical problems. Is able to participate in collaborative projects. - [K1_K02]		
<b>Assessment methods of study outcomes</b>		
The exam covering topics of the lecture. Evaluation of the assembly language program written by student, covering topics practiced in the lab.		

<b>Course description</b>		
<p>Lecture:</p> <ol style="list-style-type: none"> <li>1. Architecture and principle of operation of microprocessor system.</li> <li>2. 8051 microcontroller.</li> <li>3. IA-32 microprocessors.</li> <li>4. P6 and NetBurst microprocessors.</li> <li>5. Digital signal processors</li> </ol> <p>Laboratory:</p> <p>In the laboratory, students write programs in assembly language of Intel 8051 microcontroller. The key issues are: instruction set, addressing modes, timers, serial port, interrupts, seven segment display and LCD display.</p>		
<p><b>Basic bibliography:</b></p> <ol style="list-style-type: none"> <li>1. Manuals of selected microprocessors, microcontrollers and signal processors.</li> <li>2. I. Scot MacKenzie, The 8051 Microcontroller, Prentice Hall.</li> <li>3. M.A. Mazidi, J.G. Mazidi, The 80x86 IBM PC and Compatible Computers. Assembly Language, Design, and Interfacing, Volumes I &amp; II, Prentice Hall.</li> </ol>		
<p><b>Additional bibliography:</b></p> <ol style="list-style-type: none"> <li>1. P. Gałka, P. Gałka, Podstawy programowania mikrokontrolera 8051, PWN.</li> <li>2. M. Rafiqzaman, Microprocessors and Microcomputer-based System Design, CRC Press.</li> <li>3. B.B. Brey, The Intel Microprocessors 8086/8088, 80186, 80286, 80386, and 80486. Architecture, Programming, and Interfacing, Prentice Hall.</li> </ol>		
<b>Result of average student's workload</b>		
Activity	Time (working hours)	
1. Participation in lectures	20	
2. Participation in laboratories	20	
3. Preparation for the laboratory	45	
4. Preparation of laboratory reports	20	
5. Preparation for the exam	20	
<b>Student's workload</b>		
Source of workload	hours	ECTS
Total workload	125	5
Contact hours	40	2
Practical activities	85	3