

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Consumer Electronics		Code 1010842121010842699
Field of study Electronics and Telecommunications	Profile of study (general academic, practical) general academic	Year /Semester 1 / 2
Elective path/specialty Multimedia and Consumer Electronics	Subject offered in: Polish	Course (compulsory, elective) elective
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 2 Classes: - Laboratory: 2 Project/seminars: -		No. of credits 5
Status of the course in the study program (Basic, major, other) other		(university-wide, from another field) from field
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 5 100% 5 100%
Responsible for subject / lecturer: dr inż. Krzysztof Klimaszewski email: kklima@et.put.poznan.pl tel. +48 61 665 3895 Wydział Elektroniki i Telekomunikacji ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Has extended, in-depth knowledge of those branches of mathematics which are used in formulating and solving problems in electronic and telecommunications. Has knowledge of construction, architecture and practical application of programmable digital circuits. Has a detailed, systematic knowledge of the fundamentals of circuit theory, together with necessary mathematical background; this knowledge allows him/her to understand, analyze and evaluate the operation of electrical circuits.
2	Skills	Is able to communicate freely in English. Is able to discuss professional matters in English; is able to use knowledgeably English language sources (books, technical and scientific journals, application notes, catalogues, instructions, standards, etc.).
3	Social competencies	Is aware of the limitations of his/her current knowledge and skills; is committed to further self-study. Is aware of the necessity to approach solving technical problems with responsibility and professionalism.
Assumptions and objectives of the course: Acquaintaining students with typical designs of electronic circuits. Practical realisation of a chosen electronic circuit from design to working device.		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. Has broad knowledge of properties and characteristics of electronic parts, design and analysis of electronic circuits and printed circuit board design. - [K2_W14]		
Skills: 1. Is able to find the information about modern integrated circuits and use them in the designed circuit - [K2_U01] 2. Is able to design and build an analog or analog/digital circuit - [K2_U15] 3. Is able to design a microcontrolle circuit with a microcontroller properly chosen with respect to the requirements - [K2_U04]		
Social competencies: 1. Knows the limitations of his/her own knowledge and understands the requirement of constant development of his/her knowledge - [K2_K04] 2. Understands the importance of ensuring the electronic circuits safety - [K2_K06]		

Assessment methods of study outcomes		
Written exam		
Demonstration of the working prototype of the designed device		
Course description		
lecture: Powering the electronic circuits - linear and switching stabilizers, power sources. Protection circuits. Manufacturing technologies of electronic circuits. Rules of printed circuit board design. Examples of design solutions of electronic circuits.		
lab: Practical printed circuit board design Preparing production data. Building and debugging the designed circuit. Measurements of working circuits.		
Basic bibliography:		
1. U. Tietze, Ch. Schenk, ?Układy Półprzewodnikowe?, WNT 2009 2. Filipkowski A., ?Układy Elektroniczne Analogowe i Cyfrowe ?, WNT 2006 3. Nosal Z., Baranowski J., ?Układy Elektroniczne cz.I Układy Analogowe Liniowe?, WNT 2003 4. P. Horowitz, W. Hill, ?Sztuka Elektroniki?, WKiŁ 2006		
Additional bibliography:		
1. Adel S. Sedra, Kenneth C. Smith, ?Microelectronic Circuits?, Oxford University Press 2004 2. Richard C. Jaeger, ?Microelectronic Circuit Design?, McGraw-Hill 1997 3. S. Kuta ?Elementy i Układy Elektroniczne cz. I? Wydawnictwo AGH, 2000 4. Robert A. Pease, ?Projektowanie Układów Analogowych?, Wydawnictwo BTC 2005 5. Józef Boksa, ?Analogowe Układy Elektroniczne?, Wydawnictwo BTC 2007		
Result of average student's workload		
Activity	Time (working hours)	
1. lectures attendance	30	
2. lab exercises attendance	30	
3. preparation for labs	20	
4. homework	15	
5. literature study	15	
6. exam	2	
7. preparation for exam	15	
Student's workload		
Source of workload	hours	ECTS
Total workload	125	5
Contact hours	65	3
Practical activities	70	3