Name of the module subject         Code 1010311361010321814           Field of study Electrical Engineering         Profile of study Uprak         Vear / Semester           Electrical Engineering         Ubrak         Studject offered in: Polish         Code 001311361010321814           Electrical Engineering         Ubrak         Studject offered in: Polish         Code 001sh         Code 001sh           Cycle of study:         First-cycle studies         Form of study (full-time, part-time)         Code 001sh         Code 001sh         Code 001sh         Code (computery, elective) 001gatory           No. of neares         First-cycle studies         Form of study (full-time, part-time)         No. of redits           Lecture:         30         Classes: - Laboratory:         15         Project/seminars:         No. of redits           Education areas and fields of science and art         (brak)         (brak)         Code 4         100%           Education areas and fields of sciences         main: adam, guiczynski@ put_poznan.pl tet. 61 665 2264         Faculty of Electrical Engineering u. Plotrow 3A 60:965 Poznan         4         100%           Prerequisites in terms of knowledge, skills and social competencies:         Knows how to apply the knowledge in electronics classify put_poznan.pl tet. 61 665 2264         Faculty of Electrical Engineering u. Plotrow 3A 60:965 Poznan         1         Knows how to apply the knowledge in electron	STUDY MODULE DESCRIPTION FORM					
Field of study       Profile of study (brack)       Profile of study (brack)       Year./Semeater         Electrical Engineering       Subject offend in: Polish       Course (computeory, elective) obligatory       3 / 6         Subject offend in: Portion of study (full-time, part-time)       Subject offend in: Polish       Course (computeory, elective)         No: of routes       First-cycle studies       Form of study (full-time, part-time)       No: of credits         Lecture:       30 Classes: Lecture:       - Laboratory:       15       Project/Seminars:       15       4         Status of the course in the study program (Basic, major, other) (brak)       (university-wide, from another field)       No: of credits         Education areas and fields of science and at the course in the study program (Basic, major, other)       (university-wide, from another field)       ECTS distribution (number and %)         Education areas and fields of science and at the field 65 colds       Faculty of Electrical Engineering uit. Potrows 34 60-965 Poznan       4       100%         Responsible for subject / lecturer: dr hab. in2. Michal Gwo2d2 email: michal gwo2d2 for the course of operation and parameters of the basic elements of electronic and microelectronic       It is table to think and act in an entrepreneurial way in the area of electronic and microelectronic         1       Know how to apply the knowledge in electronics to analog-to-digital electronic circuits. Acquisition of skills to design analog-to-digital electronic systems		onic systems		Code		
Elective path/specially       3 / 6         Elective path/specially       Gurak / Subject offered in: Polish       Course (compulsory, elective) obligatory         Cycle of study:       Form of study (full-time, part-time)       Course (compulsory, elective)         First-cycle studies       full-time       No. of nours         Lacture:       30       Classes: - Laboratory:       15       Project/Seminars:       15         Status of the course in the study program (Basic, major, other) (brak)       (university-wide, from another field)       ECTS distribution (number and %)         Education areas and fields of science and art       ECTS distribution (number and %)       4       100%         Education areas and fields of sciences       mgr in2: Adam Gulczyfiski emait: michal gwozdz?       mgr in2: Adam Gulczyfiski emait: adam.gulczyfiski gent.poznan.pl tel. 61 665 2265       4       100%         Prerequisites in terms of knowledge, skills and social competencies:       1       Mow sciences       1       Mow sciences         1       Knows the rules of operation and parameters of the basic elements of electronic and microelectronic       1       Is able to think and act in an entrepreneurial way in the area of electronic disign         2       Skills       Is able to think and act in an entrepreneurial way in the area of electronic disign         3       Social competencies       Is able to think and act in an entrepren			Profile of study			
Microprocessor Control Systems in         Polish         obligatory           Cycle of study:         Form of study (full-time, part-time)         Form of study (full-time, part-time)           First-cycle studies         full-time           No. of hours         Lecture:         30         Classes:         - Laboratory:         15         Project/seminars:         15         4           Status of the course in the study program (Basic, major, other)         (university-wide, from another field)         (Urak)         ECTS distribution (number and %)           Education areas and fields of sciences and art         ECTS distribution (number and %)         4         100%           technical sciences         4         100%         4         100%           Responsible for subject / lecturer:         Responsible for subject / lecturer:         dr hab. inz. Michael Gwóźdź         mgr inz. Adam Gulczyński emai: adam gul	Electrical Engineering			3/6		
Cycle of study:       Form of study (full-time,part.time)         First-cycle studies       full-time         No. of hours       15       Project/seminars:       15         Status of the course in the study program (Basic, major, other)       (university-wide, from another field)       4         Status of the course in the study program (Basic, major, other)       (university-wide, from another field)       (brak)         Education areas and fields of science and art       (brak)       (brak)       and %,         technical sciences       Technical sciences       4       100%         Technical sciences       mgrinż. Adam Gulczyński emait: adam.gulczyński emait: adam.gul	Elective path/specialty					
First-cycle studies     full-time       No. of hours     Lecture:     30     Classes:     -     Laboratory:     15     Project/seminars:     15     4       Status of the course in the study program (Basic, major, other)     (university-wide, from another field)     (brak)       Education areas and fields of science and art     (brak)     (brak)       technical sciences     4     100%       Technical sciences     4     100%       Technical sciences     4     100%       dr hab. inż. Michał Gwóżdź     mgr inż. Adam Gulczyński     4       email: michał gwóżdź @put.poznan.pl     email: adam.gulczyński     mail: adam.gulczyński       email: bitorious 3A 60-965 Poznań     Ul. Piotrowo 3A 60-965 Poznań     Ul. Piotrowo 3A 60-965 Poznań       Prerequisites in terms of knowledge, skills and social competencies:     Il. Piotrowo 3A 60-965 Poznań       1     Knowledge     Knows the rules of operation and parameters of the basic elements of electronic and microelectronic       2     Skills     Is able to think and act in an entrepreneurial way in the area of electronic design       3     Social     Is able to think and act in an entrepreneurial way in the area of electronic design       4     Study outcomes and reference to the educational results for a field of study       Knowledge:     Is able to think and act in an entrepreneurial way in the area of electronic design <td colspan="2"></td> <td></td> <td>obligatory</td>				obligatory		
No. of hours       No. of redits         Lecture:       30       Classes:       -       Laboratory:       15       Project/seminars:       15       4         Status of the course in the study program (Basic, major, other)       (university-wide, from another flet(d)         Education areas and fields of science and art       (brak)       (brak)         Education areas and fields of science and art       (brak)       CCTS distribution (number and %)         technical sciences       4       100%       4       100%         Responsible for subject / lecturer:       Responsible for subject / lecturer:       mgr n2. Adam Gulczynski@put.poznan.pl       email: adam.gulczynski@put.poznan.pl       email: adam.gulczynski@put.poznan.pl       eth. 61 665 2285       Faculty of Electrical Engineering       u. Piotrowo 3A 60-985 Poznan         UL Piotrowo 3A 60-985 Poznan       U. Piotrowo 3A 60-985 Poznan       Faculty of Electrical Engineering       u. Piotrowo 3A 60-985 Poznan         1       Knowledge       Knows the rules of operation and parameters of the basic elements of electronic and microelectronic       study outcomes and reference to the educational results for a field of study         2       Skills       Is able to think and act in an entrepreneurial way in the area of electronic design         3       Social competencies       Is able to think and act in an entrepreneurial way in the area of electronic design						
Lecture:       30       Classes:       -       Laboratory:       15       Project/seminars:       15       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 at       (brak)       (brak)       ECTS distribution (number and %)         technical sciences       4       100%       4       100%         Technical sciences       4       100%       4       100%         Responsible for subject / lecturer:       Responsible for subject / lecturer:       data 100%       4       100%         Faculty of Electrical Engineering       usite of 1665 2285       Faculty of Electrical Engineering       usite of 1665 2285       Faculty of Electrical Engineering       10%       10%         u. Plotrowo 3A 60-965 Poznań       10%         2       Skills       Knows the rules of operation and parameters of the basic elements of electronic and microelectronic       10       Know 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       Acquisition of skills to design analog-to-digital electroni	First-cycle studies		full-time			
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(brak)         (brak)           Education areas and fields of science and ant         ECTS distribution (number and 5%)           technical sciences         4 100%           Technical sciences         4 100%           Responsible for subject / lecturer:         Responsible for subject / lecturer:           dr hab, inž. Michal Gwóźdź         mgr inž. Adam Gulczyński           email, michal.gwoźdź @put.poznan.pl         email, adam.gulczyński@put.poznan.pl           tel. 61 665 2646         tel. 161 665 2265           Faculty of Electrical Engineering         Faculty of Electrical Engineering           ul. Piotrowo 3A 60-965 Poznań         ul. Piotrowo 3A 60-965 Poznań           Prerequisites in terms of knowledge, skills and social competencies:         Imicroelectronic           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 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           1. Can d				-		
Education areas and fields of sciences       ECTS distribution (number and %)         technical sciences       4 100%         Technical sciences       4 100%         Responsible for subject / lecturer:       Responsible for subject / lecturer:         dr hab. inž. Michal Gwóźdź       mgr inž. Adam Gulczyński         email: michal.gwoźdź @put.poznan.pl       email: adam.gulczyński@put.poznan.pl         tel. 1665 2646       tel. 161 665 2245         Faculty of Electrical Engineering       Faculty of Electrical Engineering         ul. Piotrowo 3A 60-965 Poznań       ul. Piotrowo 3A 60-965 Poznań         Prerequisites in terms of knowledge, skills and social competencies:         1       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         Study outcomes and reference to the educational results for a field of study       Knowledge         Nowledge:       .       .         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 + ++]				,		
Technical sciences       4 100%         Responsible for subject / lecturer:       Responsible for subject / lecturer:         dr hab. inž. Michał Gwóźdź       mgr inž. Adam Gulczyński         email: michal.gwozdz @put.poznan.pl       email: adam.gulczynski@put.poznan.pl         tel. 61 665 2646       tel. 161 665 2285         Faculty of Electrical Engineering       ul. Piotrowo 3A 60-965 Poznań         ul. Piotrowo 3A 60-965 Poznań       ul. Piotrowo 3A 60-965 Poznań         Prerequisites in terms of knowledge, skills and social competencies:         1       Knowledge         % Kills       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         Study outcomes and reference to the educational results for a field of study       Mowiesign analog-to-digital electronic systems at the primary level.         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 operating principles and parameters of specialized microelectronics circuits, characterize the structure and the use of el	Education areas and fields of science	and art	, , , , , , , , , , , , , , , , , , ,	ECTS distribution (number		
Responsible for subject / lecturer:       Responsible for subject / lecturer:         dr hab. inż. Michai Gwóźdź       mgr inż. Adam Gulczyński         email: michal.gwoźdź@put.poznan.pl       email: adam.gulczynski@put.poznan.pl         tel. 61 665 2646       tel. 16 665 2285         Faculty of Electrical Engineering       Faculty of Electrical Engineering         ul. Piotrowo 3A 60-965 Poznań       ul. Piotrowo 3A 60-965 Poznań         Prerequisites in terms of knowledge, skills and social competencies:         1       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         6eting 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         (Knows how to apply the knowledge in the field of electronic systems - [K_W04 + K_W014+++]         Study outcomes and reference to the educational results for a field of study         Momeldege         1. Can describe the operating principles and parameters of specializ	technical sciences			4 100%		
dr hab. inż. Michał Gwóźdź       mgr inż. Adam Gulczyński         email: michał.gwozdz@put.poznan.pl       email: adam.gulczynski@put.poznan.pl         tel. 61 665 2646       Faculty of Electrical Engineering         gul. Piotrowo 3A 60-965 Poznań       ul. Piotrowo 3A 60-965 Poznań         Prerequisites in terms of knowledge, skills and social competencies:         1       Knowledge         2       Skills         3       Social competencies         1       knows how to apply the knowledge in electronics to analyze the operation of analog and digital electronic circuits in the primary         3       Social competencies         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 electronic systems at basic level - [K_W02 + K_W07 + K_W14 +++]         2. Can describe the operating of the field of electronic systems - [K_W03 + K_W014 +++]         Skills:         1. Can describe the operating of the field of electronic setsign of electronics analog-and-digital systems - [K_U03 ++ K_U07 ++]         2. Can defi	Technical science	es		4 100%		
dr hab. inż. Michał Gwóźdź       mgr inż. Adam Gulczyński         email: michał.gwozdz@put.poznan.pl       email: adam.gulczynski@put.poznan.pl         tel. 61 665 2646       Faculty of Electrical Engineering         gul. Piotrowo 3A 60-965 Poznań       ul. Piotrowo 3A 60-965 Poznań         Prerequisites in terms of knowledge, skills and social competencies:         1       Knowledge         2       Skills         3       Social competencies         4       Knows how to apply the knowledge in electronics to analyze the operation of analog and digital electronic circuits in the primary         3       Social competencies         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         Knoweldge:         1. Can describe the operating principles and parameters of specialized microelectronics circuits, characterize the structure and the use of electronic systems at basic level - [K_W02 + K_W07 + K_W14 +++]         2. Can describe the operating principles and parameters of specialized microelectronics analog-and-digital systems - [K_U03 + K_U17 ++]         2. Can describe the operating of the field of electronic systems - [K_W04 + K_W014 +++]         Skills:       1. Knows how to apply t	Responsible for subject /	lecturer:	Responsible for subject	t / lecturer:		
email: michal.gwozd2@put.poznan.pl       email: adam.gulczynski@put.poznan.pl         tel. 61 665 2646       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 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         Knows how to apply the knowledge in coelectronics circuits, characterize the structure and the use of electronic systems at the primary level.         Study outcomes and reference to the educational results for a field of study         Knows how to apply the knowledge in celectronics circuits, characterize the structure and the use of electronic systems at basic level - [K_W02 + K_W07 ++ K_W14 +++]         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 t						
Faculty of Electrical Engineering ul. Piotrowo 3A 60-965 Poznań       Faculty of Electrical Engineering ul. Piotrowo 3A 60-965 Poznań         Prerequisites in terms of knowledge, skills and social competencies:       Image: 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 cirteria of the design of electronic systems - [K_U03 ++ K_U17 ++]       2. Can describe the operating principles in the field of electronics design of electronics analog-and-digital systems - [K_U03 ++ K_U17 ++]         2. Can define the cirteria necessary for the proper design of electronics analog-and-digital systems at the basic level - [K_U03 ++ K_U07 ++]	email: michal.gwozdz@put.poz	znan.pl	email: adam.gulczynski@pu	email: adam.gulczynski@put.poznan.pl		
ul. Piotrowo 3A 60-965 Poznań       ul. Piotrowo 3A 60-965 Poznań         Prerequisites in terms of knowledge, skills and social competencies:         1       Knowledge         2       Skills         3       Social competencies         3       Social competencies         64ting to know to apply the knowledge in electronics to analyze the operation of analog and digital electronic circuits in the primary         3       Social competencies         64ting 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         Knows how to apply the knowledge in field of electronics circuits, characterize the structure and the use of electronic snalog-and-digital systems at basic level - [K_W02 + K_W07 ++ K_W14 +++]         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_W04 + K_W014 +++]         Skills:         1. Can describe the operating principles and parameters of specialized microelectronics circuits, characterize the structure and the use of electronics analog-and-digital systems - [K_W04 + K_W014 +++]         Skills:         1. Knows how to apply the knowledge in the field of electronics design of electroni		na				
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competencies         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:	3 Social Is a	Is able to think and act in an entrepreneurial way in the area of electronic design				
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:	J					
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 anlog-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:						
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 anlog-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:						
<ol> <li>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 +++]</li> <li>Can describe the basic criteria of the design of electronic systems - [K_W04 + K_W014+++]</li> <li>Skills:         <ol> <li>Knows how to apply the knowledge in the field of electronics design of electronics analog-and-digital systems - [K_U03 ++ K_U17 ++]</li> <li>Can define the criteria necessary for the proper design of electronics analog-and-digital systems at the basic level - [K_U03 ++ K_U07 ++]</li> </ol> </li> <li>Social competencies:</li> </ol>	Study outcomes and reference to the educational results for a field of study					
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+++] <b>Skills:</b> 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 ++] <b>Social competencies:</b>	Knowledge:					
<ul> <li>2. Can describe the basic criteria of the design of electronic systems - [K_W04 + K_W014+++]</li> <li>Skills: <ol> <li>Knows how to apply the knowledge in the field of electronics design of electronics analog-and-digital systems - [K_U03 ++ K_U17 ++]</li> <li>Can define the criteria necessary for the proper design of electronics analog-and-digital systems at the basic level - [K_U03 ++ K_U07 ++]</li> </ol> </li> <li>Social competencies:</li> </ul>						
<ol> <li>Knows how to apply the knowledge in the field of electronics design of electronics anlog-and-digital systems - [K_U03 ++ K_U17 ++]</li> <li>Can define the criteria necessary for the proper design of electronics analog-and-digital systems at the basic level - [K_U03 ++ K_U07 ++]</li> <li>Social competencies:</li> </ol>						
[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:	Skills:					
[K_U03 ++ K_U07 ++] Social competencies:						
•	[K_U03 ++ K_U07 ++]	ary for the proper design of ele	ectronics analog-and-digital syst	ems at the basic level -		
1. Able to think and act in an entrepreneurial way in the area of design of electronics systems - [K_K02 ++]						
	1. Able to think and act in an entr	repreneurial way in the area o	f design of electronics systems	- [K_K02 ++]		

# Assessment methods of study outcomes

#### Lecture

- Assess the knowledge and skills indicated in a written test,
- Project classes and laboratory exercises:
- 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.

Get extra points for the activity in the classroom, and in particular for:

- 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**

Updated 2017. The lecture with multimedia presentation (drawings, equations, basic content) supplemented by the content on the blackboard. Properties of specialized microelectronic circuits for analog signal processing. Introduction to the analog-todigital 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.

Detailed reviewing of reports by leading labs and commentary discussions.

Projects - teamwork.

# Basic bibliography:

1. P. Horowitz, W. Hill, Sztuka elektroniki. Część 1 i 2, WKŁ, 2014

- 2. Z. Kulka, M. Nadachowski, Analogowe układy scalone, WKŁ, W-wa, 1980
- 3. P. Górecki, Wzmacniacze operacyjne, Wydawnictwo BTC, Warszawa, 2004

4. F. Maloberti, Przetworniki danych, WKŁ, 2010

### Additional bibliography:

1. W. Kester, The Data Conversion Handbook, ISBN: 978-0-7506-7841-4, Elsevier, 2005

2. http://www.analog.com/en/parametricsearch/10785

3. Michał Krystkowiak, Adam Gulczyński, Michał Gwóźdź, Model and Research of Power Electronics Solar Converter Working with Power Grid, Proceedings of the 2016 IEEE International Power Electronics and Motion Control Conference (PEMC), Bulgaria, Varna, 25-30 September, 2016, ISBN: 978-1-5090-1797-3, pp. 186-191. DOI: 10.1109/EPEPEMC.2016.7752176.

### 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 wo	orkload	
Source of workload	hou	s ECTS
Total workload	95	4
Contact hours	70	3

15

3

Practical activities