

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Introduction to Signal Processing		Code 1011101361010500409
Field of study Engineering Management - Full-time studies -	Profile of study (general academic, practical) (brak)	Year /Semester 3 / 6
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) elective
Cycle of study: First-cycle studies	Form of study (full-time,part-time) full-time	
No. of hours Lecture: 15 Classes: - Laboratory: 15 Project/seminars: -		No. of credits 2
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 %) 2 100% 2 100%
Responsible for subject / lecturer: dr inż. Tomasz Marciniak email: Tomasz.Marciniak@put.poznan.pl tel. 61 6652 836 Wydział Informatyki ul. . Piotrowo 3a, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic concepts of algebra, probability theory, computer science, information technology
2	Skills	Basic ability to lead calculations and computer simulations
3	Social competencies	Awareness of the importance of digital signal processing algorithms in modern data communications systems
Assumptions and objectives of the course: -Introduction to basic data recording techniques, conversion and analysis of digital signals.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Knowledge of the analog-to-digital conversion - [K04-InzA_W02] 2. Interpretation of the frequency characteristics of signals - [K04-InzA_W02] 3. Knowledge of the ideas of lossless and lossy compression - [K04-InzA_W05] 4. Knowledge of data encryption and correction - [K04-InzA_W05]		
Skills:		
1. Student is able to make a critical analysis of the processes of machinery production and the organization of production systems - [K01-InzA_U5] 2. Student is able to identify the project tasks and solve simple design tasks in the construction and operation of machines - [K01-InzA_U6] 3. Student is able to use the typical method of solving simple problems involving the construction and operation of machines - [K01-InzA_U7]		
Social competencies:		
1. Student is able to consciously explain the desirability of the use of digital technology - [K01-InzA_K1] 2. Student is aware of the need to select appropriate coding techniques - [K01-InzA_K2]		

Assessment methods of study outcomes		
-Forming score: Current rating of realized tasks (scale from 2 to 5). Answers to questions about the material covered in previous lectures. Summary score: Written test. Reports from laboratory classes.		
Course description		
-Parameters of deterministic and random signals, digitization of analog signals, frequency analysis of signals, DFT algorithms, linear systems, information theory, entropy coding, dictionary coding, discrete cosine transform (DCT), lossy compression, data encryption and data correction.		
Basic bibliography:		
1. T. P. Zieliński, Cyfrowe przetwarzanie sygnałów - Od teorii do zastosowań, WKŁ, Warszawa, wydanie 2, 2009 2. S. W. Smith Cyfrowe przetwarzanie sygnałów - Praktyczny poradnik dla inżynierów i naukowców, Wydawnictwo BTC, Warszawa, 2007 3. A. Dąbrowski (red.), Przetwarzanie sygnałów przy użyciu procesorów sygnałowych, Wydawnictwo PP, Poznań, wydanie 3, 2000 4. Artur Przelaskowski, Kompresja danych. Podstawy. Metody bezstratne. Kodery obrazów, Wydawnictwo BTC, 2005		
Additional bibliography:		
1. Nauka Ekstra, tom 17. Od atomu po bit Wydawnictwo Biblioteka Gazety Wyborczej , Grudzień 2011 2. D. Salomon, Data Compression, The Complete Reference, Springer, New York, 2004 3. D. Stranneby, Cyfrowe przetwarzanie sygnałów: Metody, algorytmy, zastosowania, , Wydawnictwo BTC, Warszawa, 2004		
Result of average student's workload		
Activity	Time (working hours)	
1. Lectures	15	
2. Laboratories	15	
3. Preparation for laboratories	10	
4. Consultations	10	
5. Assessment and final test	10	
Student's workload		
Source of workload	hours	ECTS
Total workload	60	2
Contact hours	50	2
Practical activities	35	1