STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Introduction to Signal Processing		**1011105361010500409**
Field of study **Engineering Management - Part-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) **part-time**	
No. of hours Lecture: **12** Classes: **-** Laboratory: **10** Project/seminars: **-**		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		ECTS distribution (number and %)

Responsible for subject / lecturer:

dr inż. Tomasz Marciniak
email: Tomasz.Marciniak@put.poznan.pl
tel. 61 647 5935
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. S. W. Smith, Digital Signal Processing: A Practical Guide for Engineers and Scientists, http://www.dspguide.com/pdfbook.htm , Access: April 25th, 2015.

2. D. Stranneby, Digital Signal Processing: DSP and Applications by Dag Stranneby, Elsevier Inc., 2001.

3. S. J. Orfanidis, Introduction to Signal Processing, Sophocles J. Orfanidis, 2010, http://eceweb1.rutgers.edu/~orfanidi/intro2sp/

Additional bibliography:

1. A. Dąbrowski, T. Marciniak, T., Audio Signal Processing in the book Digital Systems and Applications, CRC Press Taylor & Francis Group, LLC, pp.11-1 ? 11-44, ISBN 978-0-8493-8619-0, 2008.

Result of average student's workload

Activity	Time (working hours)
1. Lectures	12
2. Laboratories	10
3. Preparation for laboratories	15
4. Consultations	10
5. Assessment and final test	10

Student's workload

Source of workload	hours	ECTS
Total workload	57	3
Contact hours	42	2
Practical activities	25	1