STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Image processing**		Code **1010803111010840200**
Field of study **Communications Technologies**	Profile of study (general academic, practical) **general academic**	Year /Semester **1 / 1**
Elective path/specialty **-**	Subject offered in: **Polish**	Course (compulsory, elective) **elective**

Cycle of study: **Doctoral studies**	Form of study (full-time,part-time) **full-time**

No. of hours				No. of credits **2**
Lecture: **15**	Classes: **-**	Laboratory: **-**	Project/seminars: **-**	

Status of the course in the study program (Basic, major, other) **other**	(university-wide, from another field) **university-wide**

Education areas and fields of science and art
 	
technical sciences
    Technical sciences
	ECTS distribution (number and %**)**
	
	2 100%
	        2 100%

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	He has in-depth knowledge of the construction and operation of telecommunications systems for the provision of multimedia services (K2_W01)
2	**Skills**	1 Can analyze the effect of multimedia systems. Able to solve problems related to multimedia systems, including the tasks containing research component. (K2_U03)
		2 He can use optimization methods to solve problems encountered in electronics and telecommunications. (K2_U05)
3	**Social competencies**	1 He knows the limitations of their knowledge and skills, understands the need for ongoing education (K2_K04)

Assumptions and objectives of the course:

The aim of the course is to broaden the knowledge of the student's doctoral student with the most advanced methods of image analysis and processing. In particular, the subject is dedicated to improving the quality of images and the automatic interpretation of the contents of both static images and moving.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. He has knowledge of advanced techniques and multimedia systems. For the latest scientific achievements in the field of multimedia telecommunications. - [UD-W01, SD-W01, SD-W02]

2. Versed in important unsolved problems in the field of multimedia telecommunications - [SD-W03]

3. He has knowledge of the methodology of research in the field covered and can prepare the publication of research - [SD-W04, SD-W05]

Skills:

1. It can acquire information related to the latest developments in the field covered. - [SD-U01]

2. Can formulate hypotheses, conduct experiments, evaluate the results of research and properly document the results of research. - [SD-U02, SD-U03, SD-U04, SD-U05, SD-U06]

Social competencies:

1. It has the ability to work in a team, and is able to disseminate their knowledge - [UD-K01, UD-K02, UD-K03]

2. He sees the need for continuous improvement of professional qualifications, is ready for the intended purpose of research - [SD-K01, SD-K02]

Assessment methods of study outcomes
1. Written or oral examinations or test questions.

Course description
Analysis of low-level content of images. Video Converters and improve image quality (restaurant image , removing the noisy images , distortion artifacts) .
Advanced techniques for the analysis of high-level content of images. Segmentation of objects. Determination of the characteristics of the image. SVM classification methods , neural networks .

Basic bibliography:

1. Marek Domański, Zaawansowane techniki kompresji obrazów i sekwencji wizyjnych, Wydawnictwo Politechniki Poznańskiej, 2000

2. Domański M., Obraz cyfrowy, WKŁ, Warszawa 2010.

3. ITU-R Rec., BT.500-1, Methodology for the subjective assessment of the quality of television pictures, 2002.

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Activities requiring personal contact with an academic teacher	15
2. Consultation content presented in class	10
3. The study of literature, preparation for classes and preparation for credit courses / examination control	25

Student's workload

Source of workload	hours	ECTS
Total workload	50	2
Contact hours	25	1
Practical activities	25	1