STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Image Technology**	Code **1010841161010840991**

Field of study **Electronics and Telecommunications**	Profile of study (general academic, practical) **general academic**	Year /Semester **3 / 6**

Elective path/specialty **Multimedia and Consumer Electronics**	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: **2** Classes: **-** Laboratory: **1** Project/seminars: **-**	No. of credits **3**

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 %**)** **3 100%** **3 100%**

Responsible for subject / lecturer:	Responsible for subject / lecturer:
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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	K_W03 K_W09 K_W11 K_W13 K_W24
2	**Skills**	K_U01 K_U15 K_U16
3	**Social competencies**	K_K02 Capable of self-learning (books, computer programs)He acts actively in class, asks questions, knowingly uses the contact with the teacher (eg. consultation).

Assumptions and objectives of the course:

The aim of the course is to provide news about the registration, preparation of data transmission and video transmission.

Understanding of basic concepts in video recording technology, the compression and transmission including the practical sessions, focus is put on the methods of data analysis. Removing the noisy, distortion, filtering the image, object segmentation, classification, basic techniques for detection and tracking.

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

Knowledge:

1. It has a structured, mathematical underpinnings of knowledge, video acquisition, human perception, quality assessment, processing, digital representation, compression and transmission of video signals, speech and audio for use in multimedia systems - [K1_W11]

2. It has a basic knowledge on developments in matters relating to the processing and image processing - [K1_W11]

3. He has knowledge in the field of non-linear processing of multimedia content, image reconstruction and restaurants, technology acquisition and presentation of stereoscopic images. - [K1_W11]

Skills:

1. He understands the technical conditions for the transmission, storage and presentation of multimedia data and can make appropriate basic requirements for technical systems implementing multimedia services. - [K1_U14]

2. Can define the requirements for the system that performs the basic tasks associated with multimedia - [K1_U14]

3. Has the ability to analyze media content, in particular the detection and classification of objects. - [K1_U14]

4. Understand the basic provisions of the relevant international standards. - [K1_U14]

Social competencies:

1. Is open to the possibility of continuous training and understands the need to improve professional competence. - [K1_K01]

Assessment methods of study outcomes

1. A written or oral exams or test questions.

2. Reports from a thematically block of laboratory.

3. Checking preparation for classes and activities in the laboratory class.

Course description

Analysis of the content of the images. Removing the noisy images, distortion artifacts. Filtering the image, edge detection, segmentation of objects (methods of sowing area), classification of data (linear and nonlinear methods, LDA, PCA, neural networks), basic techniques for object detection and tracking of moving objects. Methods HOG, SURF, SIFT. Expanding knowledge of stereoscopy, 3D video systems, advanced compression techniques. Treatment of non-linear multimedia content, image reconstruction and restaurant, technology acquisition and presentation of stereoscopic images.

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.

4. ITU-T Rec., H.264, Advanced video coding for generic audiovisual service, 2003.

5. Zieliński T., Cyfrowe przetwarzanie sygnałów. Od teorii do zastosowań, WKŁ, Warszawa 2005.

Additional bibliography:

1. ISO/IEC IS 13818-1 / ITU-T Rec. H.262: Information technology ? Generic coding of moving pictures and associated audio information. Part 1: Systems, 1997

Result of average student's workload

Activity	Time (working hours)
1. Lectures, classes and consulting the teacher.	45
2. Preparation for laboratory classes	15
3. Literature study	15
4. Preparation for exam	15

Student's workload

Source of workload	hours	ECTS
Total workload	90	3
Contact hours	50	2
Practical activities	30	1