STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Multimedia systems and technology**		Code **1010842131010840145**
Field of study **Electronics and Telecommunications**	Profile of study (general academic, practical) **general academic**	Year /Semester **2 / 3**
Elective path/specialty **Multimedia and Consumer Electronics**	Subject offered in: **Polish**	Course (compulsory, elective) **elective**
Cycle of study: **Second-cycle studies**	Form of study (full-time,part-time) **full-time**	

No. of hours				No. of credits **3**
Lecture: **2**	Classes: **-**	Laboratory: **1**	Project/seminars: **-**	

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	ECTS distribution (number and %**)**
technical sciences	**3 100%**
Technical sciences	**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**	Has a detailed knowledge about the contemporary telecomunication systems realizing multimedia services, knows and understands the operational rules of multimedia services in various types of networks, knows economical and legal rules of these services in variuos systems, has knowledge about contemporary development trends in the area of multimedia services systems.
2	**Skills**	Is able to describe potential development directions of multimedia services, is able to find information about practical use of multimedia techniques. Is able to describe limitations resulting from the solutions implemented in multimedia systems, is able to diagnose problems and indicate potential solutions. Is able to design a multimedia system that meets certain requirements. Knows the principles of DVB.
3	**Social competencies**	Demonstrates responsibility and professionalism in solving technical problems. Is able to participate in collaborative projects. K1_K02

Assumptions and objectives of the course:

Students gain the knowledge of: image acquisition techniques; the influence of acquisition system parameters (including lens) on the quality of the outcome digital image; fundamentals of stereoscopy, acquisition and presentation systems, the aspects of human perception of stereoscopic images; photo printing techniques on different kinds of papers; acquisition track calibration and image presentation.

A student is also shown different video sequence compression techniques (AVC/H2.264, VC1, AVS) and introduced into 3D television issues.

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

Knowledge:

1. Has basic knowledge about the mechanisms of acquisition and presentation of image and sound. - [K2_W01]

2. Has knowledge about the basic video sequences compression systems - [K2_W01]

3. Has basic knowledge about stereoscopic images acquisition and presentation - [K2_W01]

4. Has basic knowledge about the construction and functioning of 3D television system. - [K2_W01]

Skills:

1. A student is able to select and acquire the knowledge from literature and other sources, is able to merge the information, interpret it, as well as form and justify own opinion. - [K2_U01]

2. A student is able to analyze the functioning of 3D television system and define its parameters. - [K2_U03 K2_U13]

3. A student is able to analyze the functioning of video data compression system and define its parameters and limitations. - [K2_U03 K2_U13]

4. A student is able to define parameters of a multimedia system and design it. - [K2_U03]

5. A student is able to solve problems related to multimedia systems, also problems including a research component. - [K2_U03]

Social competencies:

1. Is aware of the limitations of his/her current knowledge and skills; is committed to lifelong learning. - [K2_K04]

2. Understands the role of information society in the country development .   - [K2_K02]

Assessment methods of study outcomes

1. Written or oral exam (problems to answer)

2. Reports from practical (laboratory) classes and tests checking a student's preparation for the classes.

Course description

?   Image acquisition techniques ? CMOS and CCD matrixes, the influence of acquisition parameters and a lens on digital image quality

?   Stereoscopic images ? acquisition and presentation systems, the details of human perception of stereoscopic images

?   Different techniques of photo printing. The kinds of print papers. Calibration of camera->monitor->printer track.

?   Video sequences compression techniques (AVC/H2.264,VC1, AVS)

?   3D television: acquisition, compression and presentation techniques

?   Implementations of some algorithms of image and sound compression.

Basic bibliography:

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

2. Jens R. Ohm, Multimedia Communication Technology, Springer 2004

Additional bibliography:

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

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

Result of average student's workload

Activity	Time (working hours)
1. Lectures and laboratory classes	45
2. Preparations for laboratory classes, reports	25
3. Literature reading	15
4. Preparations to exam	25

Student's workload

Source of workload	hours	ECTS
Total workload	80	3
Contact hours	50	2
Practical activities	35	1