

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Multimedia Techniques and Systems		Code 1010802131010842911
Field of study Electronics and Telecommunications	Profile of study (general academic, practical) general academic	Year /Semester 2 / 3
Elective path/specialty Information and Communication	Subject offered in: English	Course (compulsory, elective) elective
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 2 Classes: - Laboratory: - Project/seminars: 1		No. of credits 3
Status of the course in the study program (Basic, major, other) major		(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: prof. dr hab. inż. Marek Domański email: domanski@et.put.poznan.pl tel. +48 61 66 53 901 Faculty of Electronics and Telecommunications ul. Piotrowo 3A 60-965 Poznań		Responsible for subject / lecturer: dr inż. Adam Łuczak email: aluczak@multimedia.edu.pl tel. +48 61 66 53 840 Faculty of Electronics and Telecommunications ul. Piotrowo 3A 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Has a detailed knowledge about the contemporary telecommunication 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 various systems, has knowledge about contemporary development trends in the area of multimedia services systems. [K2_W01]
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. [K2_U03]
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 K2_U02 K_u08]
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_U13]
Social competencies:
1. A student is open to constant learning and understands the need to improve his/her professional competences. - [K2_K04]
2. A student has basic knowledge necessary to understand non-technical conditions of engineering, knows basic rules of hazard and hygiene rules of work - []
3. A student feels responsible for the designed electronic and telecommunications systems. - [K2_K05]

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. Wiczorkowska A., Multimedia, Wyd PJWSTK 2008		
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	10	
3. Literature reading	10	
4. Preparations to exam	10	
5. Consulting with the lecturer	3	
6. Participation in the exam	2	
Student's workload		
Source of workload	hours	ECTS
Total workload	80	3
Contact hours	50	2
Practical activities	25	1