STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Multimedia Systems		**1010802111010842881**

Field of study	Profile of study (general academic, practical)	Year /Semester
Electronics and Telecommunications	**general academic**	**1 / 1**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Information and Communication	**English**	**obligatory**

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

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

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

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

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	K1_W11 K1_W17 K1_W24
2	**Skills**	K1_U01 K1_U16 K1_U17
3	**Social competencies**	K1_K01 K1_K04

Assumptions and objectives of the course:

Conveying the knowledge and skills from the area of modern multimedia systems. Introducing the most important aspects and the most recent trends in development of digital distribution of multimedia content.

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

Knowledge:

1. A student has detailed knowledge about modern telecommunication systems providing multimedia services, knows and understands the principles of operation of systems providing multimedia services in variety of networks, knows economical and legal aspects of providing multimedia services, has knowledge about contemporary development directions in domain of systems for multimedia services. - [K2_W01]

Skills:

1. Is able to describe the potential development directions of multimedia services, is able to find and analyze information about practical applications of multimedia techniques. Is able to see the limitations of the applied solutions, to diagnose the potential problems existing in such systems and to propose appropriate solutions. Is able to design a multimedia system. - [K2_U03]

Social competencies:

1. Demonstrates responsibility and professionalism in solving technical problems. Is able to participate in collaborative projects. - [K2_K04]

Assessment methods of study outcomes

Written exam on the lectures subjects.

Laboratory classes are credited based on the activity of a student and self-made practical project.

Course description

Lectures:
1. Analog TV systems: PAL, NTSC.
2. Digital TV systems: DVB, ATSC, ISDB.
3. MPEG Transport Stream.
4. DVB variants.
5. Conditional access systems.
6. Stereovision, free viewpoint TV.
7. Multimedia service platforms.
8. Multimedia services.
9. Describing and searching for multimedia content.

Laboratory classes
1. Compressing video sequences with AVC codec.
2. Streaming of multimedia content.
3. Error concealment in multimedia systems.
4. Transport Stream analysis.
5. DirectShow filters.

Basic bibliography:

1. Ch. Poynton, Digital video and HDTV , Morgan Kaufman, 2003.
2. Marek Domański, ?Obraz cyfrowy?, Wydawnictwa Komunikacji i Łączności, 2011
3. Ulrich Reimers, DVB: The Family of intenational standardards for Digital Video Broadcasting.
4. Marek Domański, ?Obraz cyfrowy?, Wydawnictwa Komunikacji i Łączności, 2011
5. Ulrich Reimers, DVB: The Family of intenational standardards for Digital Video Broadcasting.

Additional bibliography:

1. www.dvb.org ? Digital Video Broadcast
2. www.dvb.org ? Digital Video Broadcast

Result of average student's workload

Activity	Time (working hours)
1. participation in lectures and laboratories	30
2. preparation for laboratory classes	15
3. preparation for completion of the course, literature study	10
4. completion of the course	2
5. Consulting with teachers	3

Student's workload

Source of workload	hours	ECTS
Total workload	60	2
Contact hours	35	1
Practical activities	30	1