



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Multimedia systems [S2EiT1E-TIT>SM]

### Course

Field of study

Electronics and Telecommunications

Year/Semester

1/1

Area of study (specialization)

Information and Communication Technologies

Profile of study

general academic

Level of study

second-cycle

Course offered in

English

Form of study

full-time

Requirements

compulsory

### Number of hours

Lecture

15

Laboratory classes

15

Other

0

Tutorials

0

Projects/seminars

0

### Number of credit points

2,00

### Coordinators

prof. dr hab. inż. Marek Domański  
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### Lecturers

### Prerequisites

Basic programming skills, telecommunication fundamentals, digital signal processing, introduction to multimedia. Ability to independently gain knowledge from various sources.

### Course objective

Gaining general understanding of multimedia systems in telecommunications, and basic problems in such systems on the basis of study of a selected system, e.g. DVB.

### Course-related learning outcomes

Knowledge:

Multimedia systems in telecommunications, and basic problems in such systems on the basis of study of a selected system, e.g. DVB.

Skills:

Ability to assess the parameters of multimedia systems implemented in telecommunication and teleinformatic networks.

Social competences:

Understanding of economic and social background for development of multimedia systems.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:

Written or oral test that includes 3-6 problems or open questions. The answers are scored with the numbers of points being dependent on complexity of the questions and problems. The acceptance threshold is 50%.

The skills and knowledge gained in laboratory classes are assessed on the basis of the performance in individual topics and as well as some tests. The acceptance threshold is 50%.

Scores: <= 50% 2,0 ; 51%-60% 3,0; 61%-70% 3,5; 71%-80% 4,0; 81%-90% 4,5; 91%-100% 5,0.

### Programme content

1. Video and audio in consumer systems - parameters, new formats.
2. Architecture of multimedia systems in communication networks.
3. Synchronisation.
4. System and service information.
5. Protection of multimedia content against transmission errors .
6. Conditional access to multimedia content.
7. Specific solutions for various types of networks.
8. Efficiency analysis for multimedia systems.
9. Digital television, video over-the-top, IP multimedia, video on demand and other interactive services. film na żądanie i inne usługi interaktywne.
10. New media - immersive media.

### Course topics

1. Video and audio in consumer systems - parameters, new formats.
2. Architecture of multimedia systems in communication networks.
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### Teaching methods

The lecture is designed as a case study, i.e. an example of a popular multimedia system is studied in detail. A good example of a system to be studied is DVB.

Lecture with slides (including pictures) displayed on screen. The slides are available on the webpage of the institute.

Laboratory classes that correspond to the selected problems. The classes need that students actively solve problems.

### Bibliography

Basic:

- U. Reimers, DVB, Springer.
- J. Whitaker, B. Benson, Standard Handbook of Video and Television Engineering, McGraw-Hill.

Additional:

- V. Madisetti (ed), Video, Speech, and Audio Signal Processing and Associated Standards (The Digital Signal Processing Handbook, Second Edition), CRC Press, 2009.
- B. Bing, Broadband Wireless Multimedia networks, Wiley.

- J-R Ohm, Multimedia Communication Technology: Representation, Transmission and Identification of Multimedia Signals (Signals and Communication Technology), Springer, 2004.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,00
Classes requiring direct contact with the teacher	31	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	29	0,00