



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Introduction to Multimedia [S1EiT1E>WdM]

Course

Field of study

Electronics and Telecommunications

Year/Semester

3/5

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

English

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

30

Laboratory classes

15

Other

0

Tutorials

0

Projects/seminars

0

Number of credit points

4,00

Coordinators

dr inż. Tomasz Grajek

tomasz.grajek@put.poznan.pl

Lecturers

Prerequisites

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

Course objective

Gaining knowledge and skills related to general understanding of multimedia in telecommunications, to human perception, representation, processing and compression of images and standardization in multimedia telecommunications.

Course-related learning outcomes

Knowledge:

Basic terms of multimedia communications. Fundamentals of multidimensional signal processing in applications to image processing. perception and representations of images and videos. Basic image processing techniques. Image compression.

Skills:

1. Usage of software tools in multimedia.

2. Solving simple problems in multimedia.
3. Usage of international standards in multimedia.

Social competences:

Understanding of the influences of economic and social conditions onto development of multimedia technology. Understanding of the importance of standardization and IP management in multimedia communications.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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Written and/or oral examination with a set of 3-10 problems. For a solution of each problem a student gets a number of points that depends on the level of difficulty. 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%.

Programme content

General understanding of multimedia in telecommunications, human perception, representation, processing and compression of images and standardization in multimedia telecommunications.

Course topics

1. Basic terms of multimedia telecommunications. Virtual and augmented reality.
2. Introduction to multidimensional signal processing - as an introduction to image processing.
3. Quantitative description and perception of visual stimuli. Acquisition and display of images. Image and video representation in technical systems. Video formats. 3D image and video. Immersive video.
4. Image compression. Lossless and lossy image coding. A popular standard image compression technology, e.g. JPEG.
5. Understanding of the standardization in multimedia communications.

Teaching methods

Lecture with slides (including pictures) displayed on screen. The slides are available after the lecture..

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

Bibliography

Basic

V. Madisetti (ed), Video, Speech, and Audio Signal Processing and Associated Standards (The Digital Signal Processing Handbook, Second Edition), CRC Press.

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

Additional

A. McAndrew, Digital Signal Processing with Matlab, Thomson.

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	55	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	45	2,00