



COURSE DESCRIPTION CARD - SYLLABUS

Course name

RECENT ADVANCES IN MULTIMEDIA

Course

Proposed by Discipline

Information and communication technology

Type of studies

Doctoral School

Form of study

full-time

Year/Semester

II/4

Course offered in

English

Requirements

elective

Number of hours

Lecture

8

Tutorials

Projects/seminars

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

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Faculty of Computing and

Telecommunications

Poznań University of Technology

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Poland

Responsible for the course/lecturer:

Prerequisites

Knowledge: Fundamentals of image/video/audio representation, processing and coding.

Skills: Ability to study research papers and to draw the practical conclusions.

Social competencies: ---



Course objective

To obtain general understanding of the recent research and development in multimedia in their various aspects.

Course-related learning outcomes

Knowledge

A PhD student who graduated from doctoral school knows and understands:

- 1) Key developmental trends of science disciplines in which education takes place at the doctoral school. [P8S_WG/SzD_W02]

Skills

A PhD student who graduated from doctoral school can:

- 1) use the knowledge from different branches of science to creatively identify, formulate and to innovatively solve complex problems or to execute research tasks in particular: - define the aim and subject of scientific research, form a research hypothesis, - develop research methods, techniques and tools and use them creatively, - draw conclusions on the basis of research results. [P8S_UW/SzD_U01]

Social competencies

A PhD student who graduated from doctoral school is ready to:

- 1) maintain and develop the ethos of research and creative communities, including: - conducting independent scientific activity, - respecting the principle of public ownership of the results of scientific activities, including the principles of intellectual property protection. [P8S_KR/SzD_K07]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

PQF code	Methods for verification of learning outcomes	Assessment criteria
W02	Assessments made in discussions during lectures and the final talk.	3.0 (50.1 - 70.0%) 4.0 (70.1 - 90.0%) 5.0 (from 90.1%)
U01	Assessments made in discussions during lectures and the final talk.	3.0 (50.1 - 70.0%) 4.0 (70.1 - 90.0%) 5.0 (from 90.1%)
K07	Assessments made in discussions during lectures and the final talk.	3.0 (50.1 - 70.0%) 4.0 (70.1 - 90.0%) 5.0 (from 90.1%)

Programme content

1. Progress in multimedia – importance of patenting and standardization
2. Recent developments in video technology
3. Recent advances in video compression
4. Recent advances in audio technology
5. Recent trends in multimedia systems and multimedia security



Course topics

1. Current standardization projects in multimedia – projects of ISO, IEC and ITU.
2. International patents (WIPO, EPO, USPTO, ...) on video compression.
3. Immersive and 3D video
4. New techniques for video coding
5. Immersive audio
6. New trends in multimedia systems
7. Forensic watermarking techniques

Teaching methods

Lecture with demonstrations plus discussions and brainstorming

Bibliography

Basic

- IEEE MultiMedia – available through *IEEEXplore*

Additional

- IEEE Signal Processing Magazine – available through *IEEEXplore*

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	8	0
Doctoral student's own work (literature studies, preparation for tutorials) ¹	42	2,0

¹ delete or add other activities as appropriate