COURSE DESCRIPTION CARD - SYLLABUS

Course name
Introduction to Multimedia [S1Teleinf1>WdM]

Course

Field of study
Teleinformatics

Year/Semester
3/5

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
45

Laboratory classes
30

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

6,00

Coordinators

Lecturers

prof. dr hab. inż. Marek Domański
marek.domanski@put.poznan.pl

Prerequisites

A student has good knowledge (including respective mathematical fundations) on signal theory, fundamental methods of digital signal processing, fundmantals of system theory, telecommunication systems and basic concepts of information theory. A student is able to conduct the basic calculations and use proper software for design and analysis of the systems of digital signal processing and transmision in communication systems. [K1_U18] The student has awarness of the need for professional approach by soving technical problems and the necessity to bear responsibility for the technical solutions proposed. [K1_K02] Understands fast developments in technical sciences, is aware of limitations of his/her knowledge and skills, understands the needs to learn further [K1_K01] .

Course objective

The course is aimed at knowledge and skills in the properties of image, video, audio and speech signals, their acquisition, processing, presentation and perception. Students are expected to gain knowledge on basic problems and techniques related to broadly used mulimedia systems, including methods of acquisition, transmission, compression and processing of multimedia data. Students are expected to gain basic skills for propoer choice of methods for individual basic tasks, and the ability to assess the results yielded by the choices.

Course-related learning outcomes

Knowledge:
Human perception of light and sound and its consequences for technical systems. Representation of image, video, audio and speech in IT systems. Basics of image, video and audio processing. Compression and transmission of image, video, audio and speech. Introduction to immersive media. Presentation of media of various types.

Skills:
Ability for right choices of basic methoda to solve the problems related to acquisition, processing, compression and presentation of image, video, audio and speech. Ability to assess the results of such choices qualitatively and quantitatively.

Social competences:
Understanding of deep influence of multimedia technology on human life, also in its social context.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Examination regarding all the topics of lectures. Examination is written and/or oral. The outcomes of laboratory course are assessed on the basis of the current work results during whole semester and test that assess preparation to laboratory classes. The acceptance threshold is 50% of correct answers from all questions and problems asked. This is the threshold for the grade 3.0. The thersholds for higher grades are uniformly distributed between 50% and 100%.

Programme content

Perception of pictures and sounds by humans, properties of the human perception systems and their consequences for technical systems. Articulation of speech. Immersive media. Standardization in multimedia. Representation of image, video and audio in various technical systems. Fundamentals of contemporary image, video and audio processing methods. Applications of artificial intelligence. Compression and transmission of image, video, audio and speech. Conditions and limitations of transmission of multimedia data in communication systems. Presentation of media of various types.

Course topics

Teaching methods

Lecture supported by presentations. Active work at laboratory, in particular execution of experiments and measurements.

Bibliography

Basic:
M. Domański, Obraz cyfrowy, WKiŁ, Warszawa 2010.

Additional:
A. Czyżewski, Dźwięk cyfrowy, AOW Exit, Warszawa 2001.
W. Butryn, Dźwięk cyfrowy, WKiŁ, Warszawa 2001.
T. Zieliński (red.), Cyfrowe przetwarzanie sygnałów
w telekomunikacji, PWN, Warszawa 2014.
J.-R. Ohm, Multimedia Communication Technology, Springer, 2016.

Breakdown of average student's workload

	Hours	ECTS
Total workload	150	6,00
Classes requiring direct contact with the teacher	79	4,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	71	2,00