# COURSE DESCRIPTION CARD - SYLLABUS

Course name
Digital television [S2EiT1E-TIT>TC]

## Course

Field of study
Electronics and Telecommunications

Year/Semester
2/3

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
elective

## Number of hours

Lecture
30

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
15

## Number of credit points

4,00

## Coordinators

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

## Lecturers

## Prerequisites

1. Student has a systematic knowledge of mathematical analysis, algebra and theory of probability. 2. Has a systematic knowledge, together with necessary mathematical background, of digital signal processing, introduction to multimedia, multimedia systems. 3. Demonstrates the ability to solve problems related to signal analysis in time domain and in frequency. 4. Basic programming skills.

## Course objective

The student will gain the general detailed knowledge on digital television with the emphasis on IP television, video over-the-top and IP multimedia.

## Course-related learning outcomes

Knowledge:
A student has knowledge on modern television systems mostly based on IP networks, including IP television, video over-the-top and IP multimedia.

Skills:
Design skills in television and multimedia systems, in particular related to those based on IP networks.

Social competences:
A student recognises the social and economical background of development of modern broadcasting and multicasting systems on consumer market.

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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1. Lecture
Written and / or oral exam. The exam consists of a few to over a dozen questions (depending on the assumed nature of the questions) and concerns the content presented during the lectures. The exact nature of the exam questions will be presented to students during one of the last lectures. Pass threshold: 50% of points.
2. Projects
Presentation of the results of projects made by students. Assessment of the results obtained, the complexity of the project and the presentation of the project itself.

## Programme content

1. Lecture
Introduction and repetition: Basic television systems worldwide. SDTV/HDTV/UHDTV. 4k and 8k and the fortcoming AV systems.
3D video and audio. Spatial audio. Ambisonics and audio objects.
IP television: interactive services. Video over-the-top: IP multimedia , today and tomorrow, Virtual reality and augmented reality. Virtual navigation. Interactive audiovisual systems of the future. Ultra-realistic IP multimedia systems. Immersive video and audio. OMAF.
Mobile television. DVB-DASH.
New platform: MPEG Media Traport MMT,
2. Projects
Projects are strictly related to the topics of IP multimedia and digital television.

## Course topics

1. Lecture
Introduction and repetition: Basic television systems worldwide. SDTV/HDTV/UHDTV. 4k and 8k and the fortcoming AV systems.
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## Teaching methods

1. Lecture
Classes with clear elements of traditional lecture and problem lecture (discussion with students of a specific problem), depending on the content of the presented material. Presentation of the theory and methods with examples of their use. Selected contents of the lecture are presented on a multimedia projector or board. The discussion of the issues is accompanied by information on their practical application.
2. Projects
Solving problems given by the teacher. Interpretation of the received solutions and formulation of conclusions. Discussion of the practical application of the methods/algorithms being the subject of projects. Practice in presenting the project results.

## Bibliography

Basic
ETSI Standards, available on etsi.org.
U. Reimers, DVB, Springer, 2008 (i inne wydania).
Additional

## Breakdown of average student's workload

| | Hours | ECTS |
|---|---|---|
| Total workload | 100 | 4,00 |
| Classes requiring direct contact with the teacher | 58 | 2,00 |
| Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation) | 42 | 2,00 |