



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Image Compression [S1MiKC1E>KO]

### Course

Field of study

Microelectronics and Digital Communication

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

elective

### 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

Introduction to multimedia: Basic knowledge on multimedia data acquisition, representation and transmission, and perception of image/video. Colors. Stereoscopy. Linear and nonlinear filtering of images. Basics of image/video processing.

### Course objective

Gain of basic knowledge on practical standard methods of image and video compression. Gain of skills on the usage of standard compression techniques for image and video.

### Course-related learning outcomes

Knowledge:

The student knows the basic methods of image and video compression, including standardized compression standards such as JPEG and HEVC. [K1\_W10]

Skills:

The student is able to apply selected methods of image and video compression, analyze their efficiency, and evaluate the quality of the resulting image representation. [K1\_U07]

The student can conduct comparative experiments on different image and video compression methods and perform analysis and interpretation of the results. [K1\_U19]

Social competences:

The student understands the importance of image and video compression in modern communication and its impact on data transmission, reception quality, and compliance with standards. [K1\_K05]

The student is able to work in a team on the analysis and evaluation of various compression techniques and present conclusions in a clear and logical manner. [K1\_K03]

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Credit in written form. Open, descriptive and calculation questions. Grading scale: <50% - 2.0 (ndst); 50% to 59% - 3.0 (dst); 60% to 69% - 3.5 (dst+) ; 70% to 79% - 4.0 (db); 80% to 89% - 4.5 (db+); 90% to 100% - 5.0 (bdb).

### Programme content

Image/video compression - standard methods in common usage.

### Course topics

Importance of image/video compression. Standardization in compression. Patents in compression. A common method for image compression - JPEG as the example. A common method for video compression - HEVC as the example. Comparison of various methods and standards.

### Teaching methods

Lecture with examples. Laboratory exercises that demonstrate selected topics considered in lectures.

### Bibliography

Basic:

M. Domański, *Obraz cyfrowy*, WKiŁ, Warszawa 2010.

D. Karwowski - *Zrozumieć Kompresję Obrazu*, 2019.

Additional:

Articles on compression available at IEEE Xplore.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00