

## I. Subject Specification

### 1. Basic Data

#### 1.1 Title

Képfeldolgozás

#### 1.2 Code

BMEEOFTDT71

#### 1.3 Type

Module with associated contact hours

#### 1.4 Contact hours

Type	Hours/week / (days)
Lecture	2

#### 1.5 Evaluation

Exam

#### 1.6 Credits

3

#### 1.7 Coordinator

name	Dr. Barsi Árpád
academic rank	Professor
email	<a href="mailto:barasi.arpad@emk.bme.hu">barasi.arpad@emk.bme.hu</a>

#### 1.8 Department

Department of Photogrammetry and Geoinformatics

#### 1.9 Website

<https://epito.bme.hu/BMEEOFTDT71>

<https://fiek2.mywire.org/course/view.php?id=2478>

#### 1.10 Language of instruction

hungarian and english

1.11 Curriculum requirements

Ph.D.

1.12 Prerequisites

1.13 Effective date

1 September 2022

## 2. Objectives and learning outcomes

### 2.1 Objectives

By completing the image processing course, students will gain a comprehensive understanding of the creation, storage and use of digital images. They will become familiar with basic image manipulation operators and techniques, computer vision solutions and their links to other disciplines. In addition to theoretical methods, the course will also cover practical applications and development environments. Throughout the semester, individual problems are solved through independent problems, allowing PhD students to integrate image analysis technologies into their own research.

### 2.2 Learning outcomes

Upon successful completion of this subject, the student:

#### A. Knowledge

1. Has an overview of the latest development in the field of image processing and computer vision.
2. Knows the advantages and shortcomings of the particular image acquisition and storage methods.
3. Has an overview of the cutting-edge image processing techniques and solutions.
4. Knows the main engineering application fields images can support.

#### B. Skills

1. Evaluates the performance of the particular image processing technology.
2. Selects appropriate data acquisition technology considering the application requirements.
3. Selects the effective data processing method for particular tasks.
4. Is able to assess the potential of data processing techniques.

#### C. Attitudes

1. Cooperates with the teacher and fellow students in expanding the knowledge,
2. Expands his knowledge with the continuous acquisition of knowledge,
3. Open to the use of information technology tools,

#### D. Autonomy and Responsibility

1. Is able to perform own literature survey.
2. Makes responsible decisions based on consultation.

## 2.3 Methods

Some introductory lectures on state-of-the-art of image processing, own research in a selected area, continuous consultation, and home assignment.

## 2.4 Course outline

Hét	Előadások és gyakorlatok témaköre
1.	Basic terms of images and image processing
2.	Image capture and storage
3.	Image features and statistics
4.	Histogram and LUT manipulations
5.	Image filtering
6.	Image segmentation and classification
7.	Basics of computer vision
8.	Consultation
9.	Consultation
10.	Consultation
11.	Consultation
12.	Consultation
13.	Consultation
14.	Students' presentation

The above programme is tentative and subject to changes due to calendar variations and other reasons specific to the actual semester. Consult the effective detailed course schedule of the course on the subject website.

## 2.5 Study materials

Gonzalez - Woods: Digital Image Processing

## 2.6 Other information

## 2.7 Consultation

Weekly opportunities discussed by supervisor.

This Subject Datasheet is valid for:

Nem induló tárgyak

**II. Subject requirements**

Assessment and evaluation of the learning outcomes

**3.1 General rules**

Learning outcomes formulated in point 2.2 are assessed on homework assignment and exam.

**3.2 Assessment methods**

<b>Teljesítményértékelés neve (típus)</b>	<b>Jele</b>	<b>Értékelt tanulási eredmények</b>
Home assignment	HW	A.1-A.4; B.1-B.4; C.1-C.3; D.1-D.2
Exam	E	A.1-A.4; B.1-B.4

A szorgalmi időszakban tartott értékelések pontos idejét, a házi feladatok ki- és beadási határidejét a "Részletes féléves ütemterv" tartalmazza, mely elérhető a tárgy honlapján.

The dates of deadlines of assignments/homework can be found in the detailed course schedule on the subject's website.

**3.3 Evaluation system**

<b>Jele</b>	<b>Részarány</b>
HW	50%
E	50%
<b>Összesen</b>	<b>100%</b>

**3.4 Requirements and validity of signature**

Successfully submitted and presented home assignment.

**3.5 Grading system**

The final grade is calculated by the average of the HW and E.

**3.6 Retake and repeat**

Late submission of the home assignment is allowed on the make-up week.

**3.7 Estimated workload**

<b>Tevékenység</b>	<b>Óra/félév</b>
classes	28
preparing HW	40
preparing for the E	22
<b>Összesen</b>	<b>90</b>

**3.8 Effective date**

1 September 2022

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Nem induló tárgyak