

Name of the course	Code	Term	T+P	Credit	ECTS
Digital Image Processing			3+0	3	4

Prerequisites and co-requisites	
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Language of the course	Turkish
Type of the course	Elective
Course Coordinator	
Name of Lecturers	
Assistants	
Aim and goals of the course	The course aims to teach basic image processing processes for computer vision deals with the processing of image data for use by a computer and to understand to the major applications areas of computer vision and image processing: image analysis, image restoration, image enhancement, and image compression
Course Learning Outcomes	Upon successful completion of the course, the students will be able to : <ol style="list-style-type: none"> 1. learn basic image processing processes for computer vision deals with the processing of image data for use by a computer 2. understand to the major applications areas of computer vision and image processing: image analysis, image restoration, image enhancement, and image compression. 3. apply the image processing algorithms and implementation of them for different real practical applications. 4. have knowledge and practical skills for image and video compression (lossy and lossles) and processing.
Contents of the course	Elements of Digital Image Processing systems, Image Formating and Sensing; Imaging geometry; Image Analysis, Preprocessing, spatial filters; First-Second order based edge detection and their applications; Image Segmentation; Thresholding-Edge-Region Based segmentation; Discrete transforms in image processing (Fourier, Cosine, Walsh-Hadamard, Wavelet transforms) and its applications; Model based object detection via Hough transform; Mathematical morphology; Feature Extraction and Analysis; Pattern Classification and recognition; Image enhancement; Image restoration, and geometric transforms; Image compression with lossles compression methods; Lossy compression methods, and fundamentals of the common compression methods: JPEG, MPEG, H.363.

Weeks	Subjects
1	Basic concepts about image processing
2	Sampling and quantization
3	Display of digital images
4	Resolution
5	Resolution
6	Image enlargement and reduction
7	Neighborhood, adjacency, connectivity
8	MIDTERM EXAM
9	Regions, borders
10	Distance metrics
11	Navigate the image
12	Simple image processing algorithms
13	Simple filters and their applications
14	Color models, Image file formats
15	FINAL EXAM

General Qualifications
In assessments it is important that students are aware of image processing techniques and are able to use their knowledge.

References
<ol style="list-style-type: none">1. Company. R. C. Gonzales, R. E. Woods, 1992, Digital Image Processing, Addison-Wesley Publishing Company.2. Sonka, Hlavac, Boyle, 1999, Image Processing, Analysis, and Machine Vision, An International Thomson Publishing3. Scott E. Humbug, 2000, Computer Vision & Image Processing, Prentice Hall.
Evaluation
Midterm Exam: % 40, Final Exam: % 60. Project or homework evaluations can be made at the beginning of the semester.