AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Image Processing								
Course Code	EEE571		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	8	Workload	201 *(Hours)*	Theory	2	Practice	2	Laboratory	0
Objectives of the Course	Objectives of this course are; to make the student identify image processing methods, comprehend importance of using computer in image processing and develop image processing algorithms.								
Course Content	Digital images Resolution, bit-depth, physical image size Simple image processing methods Arithmetic image processing Histogram, spatial filtering Image processing in RGB Improvement of images in Frequency domain Filtering images in frequency domain Morphological processes Segmentation and coding								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Demonstration, Discussion, Case Study, Project Based Study, Individual Study, Problem Solving								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Assignment	3	30
Term Assignment	1	70

Recommended or Required Reading	
1	Digital Image Processing 3rd Edition (DIP/3e), Rafael C. Gonzalez, Richard E. Woods, Prentice Hall,2008.
2	Digital Image Processing Using MATLAB, Rafael C. Gonzalez, Richard E. Woods, Steven L. Eddins, Prentice Hall, 2004

Week	Weekly Detailed Course Contents	
1	Theoretical & Practice	What is Image Processing?
2	Theoretical & Practice	Basic Steps in Image Processing and Digital Image Presentation
3	Theoretical & Practice	Basic of Color Image Processing
4	Theoretical & Practice	Sampling and Quantization
5	Theoretical & Practice	Discrete and Fast Fourier Transform
6	Theoretical & Practice	Spatial Filtering
7	Theoretical & Practice	Enhancement of Image in Frequency Domain
8	Intermediate Exam	Midterm Exam.
9	Intermediate Exam	Midterm Exam.
10	Theoretical & Practice	Wavelet Transform
11	Theoretical & Practice	Thresholding, Edge Detection
12	Theoretical & Practice	Segmentation
13	Theoretical & Practice	Morphological Properties
14	Theoretical & Practice	Principal Component Analysis
15	Theoretical & Practice	Project presentation
16	Final Exam	Final Exam.

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	16	6	4	160
Assignment	3	2	5	21

Term Project	1	10	10	20
			Total Workload (Hours)	201
			[Total Workload (Hours) / 25*] = **ECTS**	8
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	To be able to make gray-level conversion calculations for image enhancement, calculate the histogram of a picture and comprehend the picture synchronization method
2	To be able to comprehend filtering methods and develop algorithms in spatial and frequency domains.
3	To be able to calculate the 2-dimensional Fourier transform of a picture, to calculate two-dimensional convolution, to analyse and apply it for filtering in the frequency domain.
4	To be able to comprehend the basics of mathematical morphology and apply to image processing
5	Being able to follow the research topics developing in the field of Image Processing; To be able to make presentations by preparing short seminars on this subject. To gain experience in reading and writing articles.

Programme Outcomes *(Electrical and Electronics Engineering Master)*	
1	Developing and intensifying knowledge that requires expertise in the area of Electrical-Electronics Engineering, and gaining the skills necessary to analyze and solve problems using this knowledge
2	Grasping the inter-disciplinary interaction related to Electrical-Electronics Engineering, interpreting and forming new types of knowledge by combining the knowledge from Electrical-Electronics Engineering and the knowledge from various other disciplines
3	Developing new approaches to solve the complex problems arising in Electrical-Electronics Engineering, coming up with solutions while taking responsibility and carrying out a specific study independently
4	Assessing the knowledge and skill gained in the area of Electrical-Electronics Engineering with a critical view
5	Transferring the current developments and one’s own work in Electrical-Electronics Engineering, to other groups in written, oral and visual forms
6	The ability to control the collecting, interpreting, practicing and announcing processes of the Electrical-Electronics Engineering related to data taking into consideration scientific, cultural and ethical values and the ability to teach these values to others
7	Developing application plans concerning the subjects related to Electrical-Electronics Engineering and the ability to evaluate the end results of these plans within the frame of quality processes

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5
P1	3	4	3	3	3
P2	3	4	3	3	3
P3	3	4	5	3	3
P4	3	3	5	3	3
P5	4	5	5	4	4
P6	3	4	4	3	3
P7	4	3	3	4	4