

AL-MANSOUR UNIVERSITY COLLEGE
Dept. of Computer Science & Information Systems

Subject : Digital Image Processing

Year : Fourth

Weekly hours. :2 Theoretical + 2 Lab

N	Contents	H
1	<u>Image Fundamentals</u>	4
	• Picture Representation • Sampling & Quantization • Distance & Neighboring • Connectivity, Color Models	
2	<u>Image Transforms</u>	8
	• Discrete Fourier Transform • Discrete Cosine Transform • Hadamard Transform • Wavelet Transform	
3	<u>Image Enhancement</u>	12
	• Spatial Domain Techniques Gray Level Transformation, Neighborhood Averaging, Median Filtering, Histogram Equalization • Frequency Domain Techniques Low Pass Filtering, High Pass Filtering, Ideal and Non-ideal Filters	
4	<u>Image Restoration</u>	4
	• Problems Need Restoration Blur Due to Motion, Geometrical Deformation, • Concept of Inverse Filtering.	
5	<u>Image Compression</u>	12
	• Theoretical basis (Redundancy and Information), • Huffman Coding, • Lossless Compression Run Length Coding, Lossless Predictive Coding, • Lossy Compression Lossy Predictive Coding, Transform Coding, • Compression of Videos, • Compression Standard Example (JPG)	

6	<u>Image Segmentation</u> • Discontinuity Based Techniques Point, Line, Edge Detection, Edge Linking, • Thresholding, • Similarity Based Techniques Region Growing, Split and Merge, • Using Motion In Segmentation	8
7	<u>Image Representation and Description</u> • Boundary Descriptors Chain Codes, Signatures, Shape Numbers, Fourier Descriptors, • Regional Descriptors, Topological Descriptors, Texture Description, Moments	8
8	<u>Image Recognition</u> • Pattern And Classes, • Pattern Types Vectors, String, Trees, • Matching Techniques (Minimum Distance Classification)	4
	Total theoretical hours	60

References:

- R. Gonzales , Digital Image Processing